B29C

SHAPING OR JOINING OF PLASTICS; SHAPING OF MATERIAL IN A PLASTIC STATE, NOT OTHERWISE PROVIDED FOR; AFTER-TREATMENT OF THE SHAPED PRODUCTS, e.g. REPAIRING (making preforms B29B 11/00; making laminated products by combining previously unconnected layers which become one product whose layers will remain together B32B 37/00 - B32B 41/00)

Definition statement

This place covers:
Processes and apparatus for:
• shaping or joining of plastics;
• shaping of material in a plastic state when a specific material is not identified;
• shaping of material in a plastic state, not otherwise provided for.

Products obtained by processes provided for in this subclass, as long as the products are characterised by said processes.

Relationships with other classification places

Subclass B29C is often connected with the following areas:
• B29B, related to preparation or pre-treatment of the material to be shaped, making granules or preforms, beyond recovery of plastics or other constituents of waste material containing plastics;
• B29D, related to processes and apparatus for the production of particular articles characterised by their global structure, e.g. flat, hollow, or tubular articles, by their structural features, e.g. provided with screw threads, corrugations, grooves or projections, or by their purpose, e.g. buttons, optical elements, tyres or footwear. Attention should be paid to B29 note (3), i.e. classification according to production of particular articles in subclass B29D is restricted to:
  • aspects which are characteristic for the production of a particular article, and not classifiable in subclass B29B or B29C;
  • combined operations for making the particular article which are not fully classifiable in subclass B29C;B29C;
• B32B, related to layered products (products built-up of strata of flat or non-flat, e.g. cellular or honeycomb form) as well as methods or apparatus for making layered products;
• C08J, related to chemical aspects or features for treating, compounding, working-up or recovery of macromolecular substances not covered by subclasses C08B, C08C, C08F, C08G or C08H;
• C08K, related to the use of inorganic or non-macromolecular organic substances, or mixture thereof, as additives in composition of macromolecular compounds;
• C08L, related to composition of organic macromolecular compounds, such as polysaccharides and derivate, rubbers and derivate, macromolecular compounds obtained by reactions involving or not carbon-to-carbon unsaturated bonds, natural macromolecular compounds and derivatives.

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Making preforms</th>
<th>B29B 11/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods or apparatus for laminating</td>
<td>B32B 37/00</td>
</tr>
<tr>
<td>Ancillary operations in connection with laminating processes</td>
<td>B32B 38/00</td>
</tr>
<tr>
<td>Layout of apparatus or plants for lamination processes</td>
<td>B32B 39/00</td>
</tr>
</tbody>
</table>
Arrangements for controlling or monitoring lamination processes | B32B 41/00

**Application-oriented references**

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Moulding devices for producing toilet or cosmetic sticks | A45D 40/16

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Processing doughs | A21C |
| Processing meat | A22C |
| Working chocolate | A23G |
| Foundry moulding | B22C |
| Casting of Metals | B22D |
| Working metallic powder | B22F |
| Machine tools | B23 |
| Grinding or polishing | B24 |
| Machines, devices or processes for grinding or polishing of optical elements | B24B |
| Cutting work and details of apparatus related with | B26D |
| Means of perforating, punching, cutting-out, stamping-out and severing | B26F |
| Shaping clay or other ceramic compositions | B28B |
| Preparing clay and mixtures containing thereof | B28C |
| Presses in general | B30B |
| Extrusion presses | B30B 11/22 |
| Making wound articles of paper, cardboard or material worded in a manner analogous to paper | B31C |
| Working glass | C03B |
| Preparation, chemical working-up and compositions of organic macromolecular compounds | C08 |
| Candle making | C11C 5/02 |
| Making soap | C11D 13/00 |
| Manufacture of artificial filaments, threads, fibres, bristles or ribbons | D01D, D01F |
| Manufacture of articles from cellulosic fibrous suspensions or from papier-mâché | D21J |

**Special rules of classification**

In this subclass, the following rules must be applied:

- The working of plastics is, as far as possible, classified primarily according to the particular shaping technique used in this subclass;
- Combined operations for making a particular article which are not fully classifiable in this subclass must be classified in subclass B29D.
Products per se are not classified in this subclass. However, if a product is characterised by the way it is produced and not by its structure or composition, the production method should be classified in this subclass. In this subclass:

- repairing of articles shaped or produced by using techniques covered by this subclass or subclass B29D is classified in group B29C 73/00;
- component parts, details, accessories or auxiliary operations which are applicable to more than one moulding technique are classified in groups B29C 31/00 - B29C 37/00;
- component parts, details, accessories or auxiliary operations which are only applicable or only of use for one specific shaping technique are classified only in the relevant subgroups of groups B29C 39/00 - B29C 71/00.

In this subclass, it is desirable to add the indexing codes of subclasses B29K and/or B29L.

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A plastic</td>
<td>is a macromolecular compound or composition based on such a compound</td>
</tr>
<tr>
<td>In a plastic state</td>
<td>refers to a state in which the material is more or less easily deformable, locally or as a whole, by force in any direction, to assume and retain any desired shape.</td>
</tr>
</tbody>
</table>

**Synonyms and Keywords**

*In patent documents, the following abbreviations are often used:*

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resins</td>
<td>Japanese patent applications usually refer to resins instead of plastics</td>
</tr>
</tbody>
</table>

**B29C 31/00**

Handling, e.g. feeding of the material to be shaped, storage of plastics material before moulding; Automation, i.e. automated handling lines in plastics processing plants, e.g. using manipulators or robots (discharging moulded articles from the mould B29C 37/0003; storage of prepregs or SMC after impregnation or during ageing B29C 70/54; baling of rubber B29B 15/02)

**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Topic</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharging moulded articles from the mould, using means operable from outside the mould between mould parts, e.g. robots</td>
<td>B29C 37/0007</td>
</tr>
<tr>
<td>Handling tyres or parts thereof, e.g. supplying, storing, conveying</td>
<td>B29D 30/0016</td>
</tr>
<tr>
<td>Building tyres; devices for transferring annular tyre components during the building-up stage, e.g. from the first stage to the second stage building drum</td>
<td>B29D 30/2607</td>
</tr>
</tbody>
</table>
Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding material to presses</td>
<td>B30B 15/30</td>
</tr>
<tr>
<td>Transport or storage devices</td>
<td>B65G</td>
</tr>
<tr>
<td>Measuring volume, volume flow, mass flow, or liquid level</td>
<td>G01F</td>
</tr>
</tbody>
</table>

B29C 31/002

{Handling tubes, e.g. transferring between shaping stations, loading on mandrels}

Definition statement

This place covers:

![Diagram](image)

References

Limiting references

This place does not cover:

| Conditioning or physical treatment of the material to be shaped, by heating hollow bodies, e.g. tubes or profiles | B29B 13/024 |
| Conditioning or physical treatment of the material to be shaped, by heating tube ends | B29B 13/025 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Blow-moulding; handling means, e.g. transfer, loading or discharging | B29C 49/4205 |
| Shaping by bending of tubes | B29C 53/083 |
| Shaping of tube ends; e.g. flanging, belling, closing. Apparatus therefor | B29C 57/00 |
| Shaping tubes or blown tubular films; turning tubes inside out | B29C 67/0014 |
| Producing tubular articles | B29D 23/00 |
B29C 31/004

{Arrangements for converting the motion of a material which is continuously fed to a working station in a stepwise motion}

Definition statement

This place covers:

FIG. 1

FIG. 2

FIG. 1

U.S. Patent

Mac. 13, 1994

Sheet 1 of 4

4,366,885

U.S. Patent

Jul. 30, 1993

Sheet 1 of 3

4,450,093
References

Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by thermoforming, handling means, e.g. transfer means, feeding means</td>
<td>B29C 51/261</td>
</tr>
<tr>
<td>Advancing webs in general</td>
<td>B65H 20/00</td>
</tr>
<tr>
<td>Advancing webs; by looping or like devices</td>
<td>B65H 20/24</td>
</tr>
</tbody>
</table>

**B29C 31/006**

{Handling moulds, e.g. between a mould store and a moulding machine (movable moulds **B29C 33/34**; for injection moulding **B29C 45/1756**)}

**Definition statement**

*This place covers:*

- e.g. storing moulds;
- e.g. clamping mould halves outside the machine,
e.g. using a clamp for transporting.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Devices holding, supporting, or positioning work or tools, of a kind normally removable from the machine | B23Q 3/00 |
| Arrangements for handling work specially combined with or arranged in, or specially adapted for use in connection with, machine tools, e.g. for conveying, loading, positioning, discharging, sorting | B23Q 7/00 |
| Injection moulding; handling of moulds or mould parts, e.g. mould changing means | B29C 45/1756 |
| Producing contact lenses; auxiliary operations, e.g. conveying moulds from a storage to the production line in an inert atmosphere | B29D 11/00125 |
| Moulds; mounting of moulds or moulds support plates | B29C 33/305 |
| Movable moulds or cores, e.g. to or from the moulding station | B29C 33/34 |
| Continuously movable moulds, in one direction, e.g. in a closed circuit | B29C 33/36 |
| Presses, loading or unloading of dies, platens or press rams | B30B 15/028 |
**B29C 31/008**

{Handling preformed parts, e.g. inserts (B29C 37/001 takes precedence; for injection moulding B29C 45/1408; for blow moulding B29C 49/2408; for thermoforming B29C 51/165)}

**Definition statement**

*This place covers:*
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Process Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by casting; incorporating preformed parts or layers, e.g. casting around inserts or for coating articles</td>
<td>B29C 39/10</td>
</tr>
<tr>
<td>Compression moulding; incorporating preformed parts or layers, e.g. compression moulding around inserts or for coating articles</td>
<td>B29C 43/18</td>
</tr>
<tr>
<td>Foaming; incorporating or moulding on preformed parts, e.g. inserts, reinforcements</td>
<td>B29C 44/12</td>
</tr>
<tr>
<td>Injection moulding; incorporating preformed parts or layers; inserting articles into the mould</td>
<td>B29C 45/14008</td>
</tr>
<tr>
<td>Extrusion moulding; incorporating preformed parts or layers, e.g. extrusion moulding around inserts or for coating articles</td>
<td>B29C 48/15</td>
</tr>
<tr>
<td>Blow moulding; inserting labels or films into blow moulds, e.g. in-mould-labellers</td>
<td>B29C 49/2408</td>
</tr>
<tr>
<td>Thermoforming; lining or labelling</td>
<td>B29C 51/16</td>
</tr>
</tbody>
</table>
B29C 31/02
Dispensing from vessels, e.g. hoppers {(into a mould cavity B29C 31/04; large containers characterised by discharge means B65D 88/28, B65D 88/54)}

Definition statement
This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection moulding; feeding the material into the injection moulding</td>
<td>B29C 45/18</td>
</tr>
<tr>
<td>apparatus, i.e. feeding the non-plastified material into the injection unit</td>
<td></td>
</tr>
<tr>
<td>Extrusion moulding, feeding the material to the extruder</td>
<td>B29C 48/285</td>
</tr>
<tr>
<td>Methods or devices for filling or emptying bunkers, hoppers, tanks or like</td>
<td>B60G65/30</td>
</tr>
<tr>
<td>containers</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 1

![Diagram of injection moulding apparatus](image)
B29C 31/04

Feeding {of the material to be moulded}, e.g. into a mould cavity {(B29C 39/08 takes precedence; using a material distribution system to two or more fixed injection moulds B29C 45/125)}

Definition statement

This place covers:

FIG. 1A

FIG. 1B

FIG. 1C

FIG. 1D

FIG. 1E
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by casting; feeding the material into the mould</td>
<td>B29C 39/24</td>
</tr>
<tr>
<td>Shaping by coating; feeding the material on to the mould, core or other</td>
<td>B29C 41/36</td>
</tr>
<tr>
<td>substrate</td>
<td></td>
</tr>
<tr>
<td>Shaping by casting; feeding the material into the mould</td>
<td>B29C 43/085</td>
</tr>
<tr>
<td>Compression moulding; feeding the material to the mould or the</td>
<td>B29C 43/34</td>
</tr>
<tr>
<td>compression means</td>
<td></td>
</tr>
<tr>
<td>Foaming; feeding the material to be shaped</td>
<td>B29C 44/36</td>
</tr>
<tr>
<td>Injection moulding; feeding the material into the injection moulding</td>
<td>B29C 45/18</td>
</tr>
<tr>
<td>apparatus, i.e. feeding the non-plastified material into the injection unit</td>
<td></td>
</tr>
<tr>
<td>Extrusion moulding; feeding the material to the extruder</td>
<td>B29C 48/285</td>
</tr>
<tr>
<td>Accessories for mixers, feed mechanisms</td>
<td>B01F 15/0201</td>
</tr>
<tr>
<td>Producing lenses, machine for filling the moulds</td>
<td>B29D 11/00432</td>
</tr>
<tr>
<td>Feeding material in particulate or plastic state to moulding presses</td>
<td>B30B 15/302</td>
</tr>
</tbody>
</table>
B29C 31/041

{using filling or dispensing heads placed in closed moulds or in contact with mould walls (B29C 45/27 takes precedence)}

Definition statement

This place covers:
B29C 31/042

(using dispensing heads, e.g. extruders, placed over or apart from the moulds (positioning extruded preforms on conveyors B29C 31/085))

Definition statement

This place covers:
B29C 31/044

{with moving heads for distributing liquid or viscous material into the moulds}

Definition statement

This place covers:
B29C 31/044 (continued)

B29C 31/045

{moving along predetermined circuits or distributing the material according to predetermined patterns}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Apparatus in which liquid or other fluent material is projected, poured or allowed to flow on to the surface of the work; by relative movement according to a predetermined path | B05C 5/0216 |
B29C 31/047
{combined with moving moulds (B29C 31/044, B29C 31/048 take precedence)}

Definition statement

This place covers:
B29C 31/048

{the material being severed at the dispensing head exit, e.g. as ring, drop or gob, and transported immediately into the mould, e.g. by gravity}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Compression moulding; for articles of definite length; using movable moulds with circular movement; the material being fed in a continuous form

B29C 43/085
Compression moulding; feeding the material to the mould or the compression means

B29C 31/06

in measured doses {, e.g. by weighting (feeding mixers with measured doses B01F 15/0216, B01F 15/0454, B29B 7/24, B29B 7/603)}

Definition statement

This place covers:

References

Limiting references

This place does not cover:

Mixing, kneading; continuous, with mechanical mixing or kneading devices; feeding in measured doses, e.g. proportioning of several materials: B29B 7/603.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Injection moulding; feeding the material into the injection moulding apparatus, i.e. feeding the non-plastified material into the injection unit; feeding measured doses
B29C 31/061
{using stationary volumetric measuring chambers}

Definition statement

This place covers:
Definition statement

This place covers:

GB-2026378

Fig. 1.

Fig. 2.
B29C 31/065

{using volumetric measuring chambers moving between a charging station and a discharge station}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Apparatus requiring external operation and adapted at each repeated and identical operation to measure and separate a predetermined volume of fluid or fluent solid material from a supply or container without regard to weight and to deliver it, with measuring chambers moved during operation

B29C 31/066

{using feed frames, e.g. for dry material}

Definition statement

This place covers:


FIG. 4

FIG. 5
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding material in particulate or plastic state to moulding presses; by</td>
<td>B30B 15/304</td>
</tr>
<tr>
<td>using feed frames or shoes with relative movements</td>
<td></td>
</tr>
<tr>
<td>For multi-layer articles</td>
<td>B30B 15/306</td>
</tr>
</tbody>
</table>
B29C 31/068
{of the piston type}

Definition statement

This place covers:

Fig. 1

GB-826,470
B29C 31/08

of preforms {to be moulded, e.g. tablets, fibre reinforced preforms, extruded ribbons, tubes or profiles; Manipulating means specially adapted for feeding preforms, e.g. supports conveyors (B29C 31/066, B29C 37/001, B29C 43/085 take precedence)}

Definition statement

This place covers:

FIG. 8
B29C 31/085
{combined with positioning the preforms according to predetermined patterns, e.g. positioning extruded preforms on conveyors (B29C 70/30 takes precedence; for building tyres B29D 30/08)}

Definition statement

This place covers:

U.S. Patent  Feb. 6, 1996  Sheet 1 of 10  5,489,351

FIG. 1

FIG. 2

U.S. Patent  Feb. 6, 1996  Sheet 2 of 10  5,489,351
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Shaping composites; positioning reinforcements in a mould | B29C 70/54 |
B29C 31/10

of several materials

Definition statement

This place covers:
Moulds or cores; Details thereof or accessories therefor

Definition statement

This place covers:

Moulds or dies being the tool used to shape the plastic parts in moulding processes in its desired form. A mould typically comprises a cavity to shape a plastic part.
Rolls used in continuous moulding processes
Making of moulds
Designing moulds.

Relationships with other classification places
The scope of B29C 33/00 is limited to moulds for shaping substances being in a plastic state
Moulds for shaping other substances are not covered by this class, but by the class in their field of application

References

Limiting references
This place does not cover:

| Moulds for making tyres | B29D 30/0606 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulds for pressure die casting | B22D 17/22 |
| Moulds for shaping clay or other ceramic products | B28B 7/34 |

Special rules of classification
Moulds specific for a single moulding technology are classified in that technology: e.g. moulds for injection moulding B29C 45/26, moulds for blow moulding B29C 49/48.
Since the classification scheme present in B29C 45/00 is much more detailed, for reasons of search efficiency, classification in B29C 45/00 is preferred above a classification in B29C 33/00 in the case that both classifications would be applicable.

Synonyms and Keywords
In patent documents, the following words/expressions are often used as synonyms:
- "Mould", "mold" and "die"

B29C 33/04
using liquids, gas or steam {(tyre moulds with incorporated heating or cooling means using liquids, gas or steam B29D 30/0601)}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Heating using liquids, gas or steam in presses | B30B 15/064 |
B29C 33/3842
{Manufacturing moulds, e.g. shaping the mould surface by machining}

Definition statement
This place covers:
Making of moulds made out of a plastic substance. The application of the created mould, does not necessarily need to be in the field of B29C.

References
Limiting references
This place does not cover:

| Making of moulds by metal processing | B22, B23, in particular B23P 15/24 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Mould materials, implicitly disclosed by the process of making them | B29C 33/38, B29C 33/40, B29C 33/565 |

B29C 33/442
{with mechanical ejector or drive means therefor}

References
Limiting references
This place does not cover:

| Mechanical ejectors for injection moulding | B29C 45/4005 |

B29C 33/444
{for stripping articles from a mould core, e.g. using stripper plates}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Discharging by stripping articles from cores | B29C 37/0003 |
B29C 33/56
Coatings {, e.g. enameled or galvanised}; Releasing, lubricating or separating agents {(in-mould coating B29C 37/0028; using or applying separating agents B29C 37/0067)}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Coating compositions</th>
<th>C09D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricating compositions</td>
<td>C10M</td>
</tr>
</tbody>
</table>

B29C 35/00
Heating, cooling or curing, e.g. crosslinking or vulcanising; Apparatus therefor (moulds with incorporated heating or cooling means B29C 33/02 {; thermal after-treatment of shaped articles B29C 71/02}; curing devices for plastics dental prostheses A61C 13/14; before moulding B29B 13/00)

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Moulds with incorporated heating or cooling means</th>
<th>B29C 33/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal after-treatment of shaped articles</td>
<td>B29C 71/02</td>
</tr>
<tr>
<td>Curing devices for plastic dental prostheses</td>
<td>A61C 13/14</td>
</tr>
<tr>
<td>Thermal treatment of the material to be shaped before moulding</td>
<td>B29B 13/00</td>
</tr>
<tr>
<td>Conditioning or physical treatment of the material to be shaped</td>
<td>B29B 13/00</td>
</tr>
</tbody>
</table>

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Crosslinking of macromolecular substances | C08J 3/24 |
B29C 35/007

{Tempering units for temperature control of moulds or cores, e.g. comprising heat exchangers, controlled valves, temperature-controlled circuits for fluids (B29C 35/0294 takes precedence)}

Definition statement

This place covers:
References

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

- Moulds or cores with incorporated heating or cooling mean, using liquids, gas or steam: B29C 33/04
- Injection moulding, heating or cooling of the mould, control circuit therefor: B29C 45/7306
B29C 35/02

Heating or curing, e.g. crosslinking or vulcanizing {during moulding, e.g. in a mould} (cold vulcanisation B29C 35/18 {; vulcanising tyres, presses therefor B29D 30/0601})

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Moulds or cores with incorporated heating or cooling means</th>
<th>B29C 33/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by casting, heating or cooling</td>
<td>B29C 39/38</td>
</tr>
<tr>
<td>Shaping by coating, heating or cooling</td>
<td>B29C 41/46</td>
</tr>
<tr>
<td>Compression moulding, heating or cooling</td>
<td>B29C 43/52</td>
</tr>
<tr>
<td>Shaping by swelling, foaming, heating or cooling</td>
<td>B29C 44/3415</td>
</tr>
<tr>
<td>Injection moulding, heating or cooling</td>
<td>B29C 45/72</td>
</tr>
<tr>
<td>Extrusion moulding, heating</td>
<td>B29C 48/78</td>
</tr>
<tr>
<td>Blow-moulding, heating or cooling</td>
<td>B29C 49/64</td>
</tr>
<tr>
<td>Shaping by thermoforming, heating or cooling</td>
<td>B29C 51/42</td>
</tr>
<tr>
<td>Shaping by bending, folding, heating or cooling</td>
<td>B29C 53/84</td>
</tr>
<tr>
<td>Lining or sheathing, heat treatment</td>
<td>B29C 63/0065</td>
</tr>
<tr>
<td>Producing pneumatic tyres, vulcanising tyres, vulcanising presses for tyres</td>
<td>B29D 30/0601</td>
</tr>
<tr>
<td>Heating or cooling presses or parts therefor</td>
<td>B30B 15/34</td>
</tr>
</tbody>
</table>
**B29C 35/0227**

{using pressure vessels, e.g. autoclaves, vulcanising pans (B29C 35/065 takes precedence)}

**Definition statement**

*This place covers:*
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Process Description</th>
<th>Classification Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping composites, using isostatic pressure, e.g. autoclave</td>
<td>B29C 70/44</td>
</tr>
<tr>
<td>Processes of utilising sub-atmospheric or super-atmospheric pressure to effect chemical or physical change of matter, pressure vessels, autoclaves</td>
<td>B01J 3/04</td>
</tr>
</tbody>
</table>
B29C 35/0238

{Presses provided with pressure vessels, e.g. steam chambers}

Definition statement

This place covers:
B29C 35/0244
{using fluidised bed}

Definition statement

This place covers:

U.S. Patent May 1, 2001 Sheet 4 of 10 US 6,224,798 B1

FIG. 5

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Chemical or physical process in general, conducted in the presence of fluids and solid particles, with fluidised particles, according to “fluidised bed” technique | B01J 8/24 |
**B29C 35/025**

{for articles of indefinite length}

**Definition statement**

This place covers:
Informative references

Attention is drawn to the following places, which may be of interest for search:

| Chemical or physical process in general, conducted in the presence of fluids and solid particles, with fluidised particles, according to "fluidised bed" technique, for treatment of endless filamentary, band or sheet material | B01J 8/46 |

B29C 35/025

{using friction}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Joining of preformed parts, by heating, using friction | B29C 65/06 |
B29C 35/0261
{using ultrasonic or sonic vibrations}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joining of preformed parts, by heating, using ultrasonic vibrations</td>
<td>B29C 65/08</td>
</tr>
<tr>
<td>Chemical, physical or physico-chemical processes in general, employing</td>
<td>B01J 19/10</td>
</tr>
<tr>
<td>sonic or ultrasonic vibrations</td>
<td></td>
</tr>
</tbody>
</table>
**B29C 35/0266**

{Local curing (for repairing **B29C 73/34**)}

**Definition statement**

This place covers:
B29C 35/0272

(using lost heating elements, i.e. heating means incorporated and remaining in the formed article (for preforms with internal stresses B29C 61/0625; joining using lost heating elements B29C 65/34; making electrically conductive articles B29C 70/882))

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by liberation of internal stresses, making preforms comprising incorporated or associated heating means</td>
<td>B29C 61/0625</td>
</tr>
<tr>
<td>Joining of preformed parts, by heating, using heated elements which remain in the joint</td>
<td>B29C 65/34</td>
</tr>
</tbody>
</table>
B29C 35/0277
{Apparatus with continuous transport of the material to be cured (B29C 35/025, B29C 35/06, B29C 35/10, B29C 35/14 take precedence)}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Movable moulds or cores</th>
<th>B29C 33/34</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuously movable moulds or cores</td>
<td>B29C 33/36</td>
</tr>
</tbody>
</table>
B29C 35/0288

{Controlling heating or curing of polymers during moulding, e.g. by measuring temperatures or properties of the polymer and regulating the process (controlling or regulating chemical, physical or physico-chemical processes in general B01J 19/0006)}

Definition statement

This place covers:

FIG-4
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by casting, measuring, controlling or regulating</td>
<td>B29C 39/44</td>
</tr>
<tr>
<td>Shaping by coating, measuring, controlling or regulating</td>
<td>B29C 43/58</td>
</tr>
<tr>
<td>Compression moulding, measuring, controlling or regulating</td>
<td>B29C 44/60</td>
</tr>
<tr>
<td>Shaping by swelling, foaming, measuring, controlling or regulating</td>
<td>B29C 44/60</td>
</tr>
<tr>
<td>Injection moulding, measuring, controlling or regulating of temperature</td>
<td>B29C 45/78</td>
</tr>
<tr>
<td>Extrusion moulding, measuring, controlling or regulating</td>
<td>B29C 48/92</td>
</tr>
<tr>
<td>Blow-moulding, measuring, controlling or regulating</td>
<td>B29C 49/78</td>
</tr>
<tr>
<td>Shaping by thermoforming, measuring, controlling or regulating</td>
<td>B29C 51/46</td>
</tr>
</tbody>
</table>
**B29C 35/0294**  
{using tempering units for temperature control of moulds or cores}

**Definition statement**

*This place covers:*

![Diagram](image)

**B29C 35/04**  
using liquids, gas or steam

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Subject</th>
<th>B29C code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joining of preformed parts; e.g. welding of plastics materials; making use of hot liquids, i.e. the liquid is in contact with the material to be joined</td>
<td>B29C 65/026</td>
</tr>
<tr>
<td>Joining of preformed parts; e.g. welding of plastics materials; using hot gases</td>
<td>B29C 65/10</td>
</tr>
<tr>
<td>Joining of preformed parts; e.g. welding of plastics materials; using flames</td>
<td>B29C 65/106</td>
</tr>
</tbody>
</table>
B29C 35/041
{using liquids}

Definition statement

This place covers:
**B29C 35/06**

for articles of indefinite length

**Definition statement**

*This place covers:*

---

**FIG. 1**

**FIG. 3**
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Extrusion moulding; heating the stream of extruded material  B29C 48/91
B29C 35/065
{in long tubular vessels}

Definition statement

This place covers:

B29C 35/08
by wave energy or particle radiation {B29C 64/00, B29C 71/04 take precedence}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Using wave energy for welding | B29C 65/14 |
| Using laser for welding       | B29C 65/16 |
Using induction heating for welding

Dental auxiliary appliances, apparatus for curing resin by radiation

Chemical, physical or physico-chemical processes in general, employing particle radiation or gamma-radiation

Chemical, physical or physico-chemical processes in general, employing electromagnetic waves

Producing optical elements, curing the lens material

Processes of treating or compounding macromolecular substances, treatment by wave energy or particle radiation

Irradiation devices

Induction heating

**B29C 35/0805**

{using electromagnetic radiation}

**Definition statement**

*This place covers:*

![Diagram](image-url)
B29C 35/0888
{using transparent moulds}

Definition statement

This place covers:

U.S. Patent 5,885,514
Mar. 23, 1999
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Producing optical elements, curing the lens material | B29D 11/00442 |
| Photomechanical, e.g. photolithographic, production of textured or patterned surfaces, lithigraphic processes using patterning methods other than those involving the exposure to radiation, e.g. by stamping | G03F 7/0002 |

B29C 35/0894

(provided with masks or diaphragms)

Definition statement

This place covers:
B29C 35/10
for articles of indefinite length

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Extrusion moulding; heating the stream of extruded material

B29C 35/12

Dielectric heating

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Moulds or cores with incorporated heating means for dielectric heating</th>
<th>B29C 33/08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dielectric heating for welding</td>
<td>B29C 65/04</td>
</tr>
</tbody>
</table>
B29C 35/14
for articles of indefinite length

Definition statement

This place covers:

Dec. 21, 1954
J. GORDON
2,697,773
ELECTRIC HEATING CONVERTER APPARATUS
Filed Aug. 16, 1951
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Extrusion moulding; heating the stream of extruded material | B29C 48/78 |

B29C 35/16

Cooling \{ (cooling extruded material B29C 48/911; cooling preforms for blow moulding B29C 49/6427; cooling blown articles B29C 49/66; cooling tyres during post cure inflation B29D 30/0643) \}

Definition statement

This place covers:

U.S. Patent May 6, 1997 Sheet 2 of 2 5,626,801
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Moulds or cores with incorporated heating or cooling means</th>
<th>B29C 33/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrusion moulding, cooling the stream of extruded material</td>
<td>B29C 48/911</td>
</tr>
<tr>
<td>Blow-moulding, thermal conditioning of preforms by cooling hot or molten preforms</td>
<td>B29C 49/6427</td>
</tr>
<tr>
<td>Blow-moulding; cooling by refrigerant introduced into the blown article</td>
<td>B29C 49/66</td>
</tr>
</tbody>
</table>

**B29C 37/00**

Component parts, details, accessories or auxiliary operations, not covered by group **B29C 33/00** or **B29C 35/00**

**Definition statement**

This place covers:

Methods and processes for removing articles from the mould,

Applying surface layers to moulded articles during moulding, e.g. in mould coating,

Methods for compensating volume or shape change during moulding,

Method for degassing moulded articles during moulding (e.g. draining off gas during moulding),

Methods wherein separating agents are used during or after moulding,

Methods for obtaining anchoring effects between layers during moulding,

Method for trouble-shooting during starting or stopping moulding apparatus,

Methods for deburring or deflashing moulded articles.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>measuring or controlling heating, curing</td>
<td>B29C 35/0294</td>
</tr>
<tr>
<td>measuring, controlling or regulating casting</td>
<td>B29C 39/44</td>
</tr>
<tr>
<td>measuring, controlling or regulating moulding by coating</td>
<td>B29C 41/52</td>
</tr>
<tr>
<td>measuring, controlling or regulating compression moulding</td>
<td>B29C 43/58</td>
</tr>
<tr>
<td>measuring, controlling or regulating foaming</td>
<td>B29C 44/60</td>
</tr>
<tr>
<td>dehumidifying moulds during injection moulding</td>
<td>B29C 45/1701</td>
</tr>
<tr>
<td>measuring, controlling or regulating injection moulding</td>
<td>B29C 45/76</td>
</tr>
<tr>
<td>detecting absence or presence of articles during injection moulding after ejection</td>
<td>B29C 45/7626</td>
</tr>
<tr>
<td>measuring, controlling or regulating extrusion</td>
<td>B29C 48/92</td>
</tr>
<tr>
<td>measuring, controlling or regulating blow moulding</td>
<td>B29C 49/78</td>
</tr>
<tr>
<td>measuring, controlling or regulating thermoforming</td>
<td>B29C 51/46</td>
</tr>
<tr>
<td>detecting absence or presence of articles during welding</td>
<td>B29C 66/8746</td>
</tr>
</tbody>
</table>

B29C 37/0003

{Discharging moulded articles from the mould (constructions for removing the articles B29C 33/44)}

Definition statement

This place covers:

![Diagram of the definition statement](image)
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<p>| Discharging casting moulds                      | B29C 39/36 |
| Discharging coated moulds                      | B29C 41/42 |</p>
<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 43/50</td>
<td>Discharging compression moulds</td>
</tr>
<tr>
<td>B29C 45/40</td>
<td>Discharging injection moulds</td>
</tr>
<tr>
<td>B29C 49/70</td>
<td>Discharging blow moulds</td>
</tr>
<tr>
<td>B29C 51/44</td>
<td>Discharging thermoforming moulds</td>
</tr>
<tr>
<td>B29D 11/00192</td>
<td>Demoulding optical elements, e.g. lenses</td>
</tr>
<tr>
<td>B29D 30/0603</td>
<td>Producing tyres, loading or unloading tyres presses</td>
</tr>
</tbody>
</table>

**B29C 37/0007**

(using means operable from outside the mould for moving between mould parts, e.g. robots)

**Definition statement**

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Discharging injection moulds, using means movable from outside the mould | B29C 45/42 |
B29C 37/001
{combined with means for loading preforms to be moulded or inserts, e.g. preformed layers}

Definition statement
This place covers:
B29C 37/0014
{by flexibly or permanently deforming undercut portions of the articles}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Discharging injection moulds, by flexible movement of undercut article  B29C 45/4407
B29C 37/0017

{by stripping articles from mould cores}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Moulds or cores with means for the removal of articles; with mechanical ejector or drive means for stripping articles from a mould core, e.g. using stripper plates | B29C 33/444 |
B29C 37/0021

{and using a rotating movement to unscrew articles (in particular used in injection moulding B29C 45/178)}

Definition statement

This place covers:
B29C 37/0025

{Applying surface layers, e.g. coatings, decorative layers, printed layers, to articles during shaping, e.g. in-mould printing (moulding on preformed layers as inserts B29C 70/68; applying fluent material to surfaces in general B05)}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression moulding of definite length, incorporating preformed linings</td>
<td>B29C 43/183</td>
</tr>
<tr>
<td>Injection moulding, incorporating preformed parts or layers, multilayered</td>
<td>B29C 45/14811</td>
</tr>
</tbody>
</table>
B29C 37/0028

{In-mould coating, e.g. by introducing the coating material into the mould after forming the article}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Injection moulding, making multilayered or multicoloured articles | B29C 45/16 |
B29C 37/0032

{the coating being applied upon the mould surface before introducing the moulding compound, e.g. applying a gelcoat (B29C 44/14 and B29C 44/32 take precedence)}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Reference</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by coating a mould, making multilayered or multicoloured articles of definite length</td>
<td>B29C 41/22</td>
</tr>
<tr>
<td>Injection moulding, making multilayered articles, applying surface layers inside the mould cavity, e.g. in mould coating (IMC)</td>
<td>B29C 45/1679</td>
</tr>
</tbody>
</table>
B29C 37/005

{Compensating volume or shape change during moulding, in general}

Definition statement

This place covers:


FIG. 1

FIG. 2


FIG. 3

monomer introduction

polymerization

monomer introduction

polymerization

C. swelled polymer
the other portion then
signal “C”; monomer

monomer + polymer

volume-shrunken preform for optical fiber in a state of gel

finished preform for optical fiber having no vacancy
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by casting; compensating volume change, e.g. retraction</td>
<td>B29C 39/44</td>
</tr>
<tr>
<td>Shaping by coating a mould or a core; compensating volume change, e.g. retraction</td>
<td>B29C 41/48</td>
</tr>
<tr>
<td>Compression moulding, compensating volume change, e.g. retraction</td>
<td>B29C 43/54</td>
</tr>
</tbody>
</table>

B29C 37/0053

{Moulding articles characterised by the shape of the surface, e.g. ribs, high polish (mould construction therefor B29C 33/42; surface shaping of articles B29C 59/00; by incorporating filler in or near the surface B29C 70/64)}

Definition statement

This place covers:

Fig-1

Fig-2

Fig-3
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Moulds or cores characterized by the shape of the moulding surface, e.g. ribs, grooves | B29C 33/42 |
| Shaping by casting, making articles of definite length characterised by the shape of the surface | B29C 39/026 |
| Compression moulding of article of definite length characterised by the shape of the surface | B29C 43/021 |
| Injection moulding, mould cavity walls provided with means for marking or patterning | B29C 45/372 |
| Blow moulding moulds having decorating or printing means | B29C 49/52 |
| Photomechanical, e.g. photolithographic, production of textured or patterned surfaces, e.g. printing surfaces, lithographic processes using patterning methods other than those involving the exposure to radiation, e.g. by stamping | G03F 7/0002 |

**B29C 37/0057**

{Moulding single grooves or ribs, e.g. tear lines (folding lines B29C 53/06)}

**Definition statement**

*This place covers:*

![Image of compression moulding](attachment:image.png)

**FIG. 5**

![Image of injection moulding](attachment:image.png)

**FIG. 6**

![Image of blow moulding](attachment:image.png)

**FIG. 7**

*U.S. Patent* 6,340,372 B1
B29C 37/006

{Degassing moulding material or draining off gas during moulding (venting means in moulds B29C 33/10)}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by casting; casting under special conditions, e.g. vacuum:</td>
<td>B29C 39/42</td>
</tr>
<tr>
<td>Degassing, draining off gases, as after treatment</td>
<td>B29C 71/00</td>
</tr>
<tr>
<td>Producing lenses, removing oxygen from the mould</td>
<td>B29D 11/00125</td>
</tr>
</tbody>
</table>
B29C 37/0064
{of reinforced material}

Definition statement

This place covers:
B29C 37/0067
{Using separating agents during or after moulding; Applying separating agents on preforms or articles, e.g. to prevent sticking to each other (separating agents B29C 33/60)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Moulds or cores, coatings, applying the releasing agent | B29C 33/58 |
| Moulds or cores, coatings, releasing, lubricating or separating agent | B29C 33/60 |
B29C 37/0071
{Dusting machines}

Definition statement

This place covers:
B29C 37/0075

{using release sheets}

Definition statement

This place covers:
Oct. 3, 1961

R. ROTH ET AL.

AUTOMATIC CONTROLLER

Filed Feb. 28, 1960

3,002,840

FIG. 1

FIG. 2

FIG. 3

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Release sheets for moulds or cores

B29C 33/68
B29C 37/0078

{Measures or configurations for obtaining anchoring effects in the contact areas between layers (surface shaping B29C 59/00; B29C 66/02 takes precedence)}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Shaping composites, comprising fillers only, the filler influencing the surface characteristics of the material, e.g. by concentrating near the surface or by incorporating in the surface by force

B29C 70/64

B29C 37/0082

{Mechanical anchoring (B29C 66/303 takes precedence)}

Definition statement

This place covers:
B29C 37/0085
{by means of openings in the layers (joining through openings B29C 66/304)}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection moulding in or through a hole in the article</td>
<td>B29C 45/14344</td>
</tr>
<tr>
<td>Joining by riveting</td>
<td>B29C 65/60</td>
</tr>
</tbody>
</table>
B29C 37/0089

{Sealing devices placed between articles and treatment installations during moulding or shaping, e.g. sealing off the entrance or exit of ovens or irradiation rooms, connections between rooms at different pressures}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sealings between relatively moving surfaces which permits material to be continuously conveyed  F16J 15/168
B29C 37/0092
{Drying moulded articles or half products, e.g. preforms, during or after moulding or cooling}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Drying in general | F26B |
B29C 37/02
Deburring or deflashing {(thermal deburring in general B23D 79/005)}

Definition statement
This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blow-moulding; deflashing outside the mould; deflashing the neck portion</td>
<td>B29C 49/72</td>
</tr>
<tr>
<td>Cutting work characterised by the nature of the cutting made</td>
<td>B29C 70/00</td>
</tr>
<tr>
<td>Method, machines, or devices for working metals by removal of material for thermal deburring</td>
<td>B23D 79/005</td>
</tr>
<tr>
<td>Machines or devices designed for grinding edges or bevels on works or for removing burrs characterised by a special design for grinding plastic materials</td>
<td>B24B 9/20</td>
</tr>
<tr>
<td>Methods for use of abrasive blasting for polishing surfaces for deburring</td>
<td>B24C/08B</td>
</tr>
</tbody>
</table>
### Abrasive blasting machines or devices
B24C 3/00

### Machines or devices designed for polishing or abrading surfaces on work by means of tumbling apparatus
B24D31/00

#### B29C 39/00

**Shaping by casting, i.e. introducing the moulding material into a mould or between confining surfaces without significant moulding pressure; Apparatus therefor (B29C 41/00 takes precedence)**

**Definition statement**

*This place covers:*

Low or zero pressure casting methods of polymers or their pre-cursors into a mould or between confining surfaces, apparatus and articles obtained by casting, when these articles are characterised by the casting method.

**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Process</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spin casting</td>
<td>B29C 41/045</td>
</tr>
<tr>
<td>Casting of dental prosthesis</td>
<td>A61C 13/20</td>
</tr>
<tr>
<td>Casting of membranes</td>
<td>B01D 67/0013</td>
</tr>
<tr>
<td>Centrifugal casting specially adapted for tyres or parts thereof</td>
<td>B29D 30/0679</td>
</tr>
<tr>
<td>Casting of microstructured devices</td>
<td>B81C 99/0085</td>
</tr>
</tbody>
</table>

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>Process</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by internal pressure generated in the material, e.g. swelling, foaming</td>
<td>B29C 44/00</td>
</tr>
<tr>
<td>Joining by applying molten plastics or by moulding</td>
<td>B29C 65/40, B29C 65/42, B29C 65/70</td>
</tr>
<tr>
<td>Screen moulding</td>
<td>B29C 67/08</td>
</tr>
<tr>
<td>Molding wax</td>
<td>B29C 67/241</td>
</tr>
<tr>
<td>Liquid injection molding of liquid silicone rubbers, polyurethanes and other highly reactive materials under high pressure</td>
<td>B29C 67/246</td>
</tr>
<tr>
<td>Spinning of moulds for a specific filler concentration or distribution of the filler</td>
<td>B29C 70/64</td>
</tr>
<tr>
<td>Encapsulating inserts having non-encapsulated projections, e.g. terminal portions of electrical components</td>
<td>B29C 70/72</td>
</tr>
<tr>
<td>Moulding sealings into closures</td>
<td>B29C 70/80</td>
</tr>
<tr>
<td>Casting of foodstuff or confectionary</td>
<td>e.g. A23G 3/2023, A23G 1/205</td>
</tr>
<tr>
<td>Casting cosmetic material, such as lipsticks</td>
<td>A45D 40/16</td>
</tr>
<tr>
<td>Making brushes by casting a body around bristles</td>
<td>A46D 3/005</td>
</tr>
</tbody>
</table>
Methods for making crowns for teeth

Encapsulating hollow fibres, e.g. for filters,

Metal casting

Casting of ceramics or other cementitious material

Moulding, e.g. casting of optical elements, e.g. lenses, prisms

Designs imitating natural patterns

Manufacture of films or sheets

Encapsulation, potting and similar processes used in electronics

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

• "casting", "moulding", "pouring", "potting" and "encapsulating"

B29C 41/00

Shaping by coating a mould, core or other substrate, i.e. by depositing material and stripping-off the shaped article; Apparatus therefor (with compacting pressure B29C 43/00 {} by lay-up of reinforcement of substantial or continuous length B29C 70/30))

Definition statement

This place covers:

depositing material and stripping-off the shaped article

Relationships with other classification places

Processes for applying liquids or other fluent materials are provided in B05D 1/00 e.g. coating by rotation: B05D 1/002; coating by spin coating B05D 1/005; coating by dipping B05D 1/18; coating performed by gravity only B05D 1/30.

The difference with the processes provided in the group B29C 41/00, is that in addition to coating step, a step of stripping of the article is provided (cf. the title of B29C 41/00 "...i.e. by depositing material and stripping-off the shaped article...")

References

Limiting references

This place does not cover:

Shaping by spraying of fibres on a mould, former or core: B29C 70/30

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spinning the mould for a specific filler concentration or distribution B29C 70/64
### Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- spraying, slush moulding or casting, rotational moulding, rotomoulding, moulding by spinning, spin casting, centrifugal casting.

### B29C 43/00

**Compression moulding, i.e. applying external pressure to flow the moulding material; Apparatus therefor**

(by liberation of internal stresses **B29C 61/006**)

**Definition statement**

This place covers:

Compression moulding refers to shaping polymeric materials by using moulding devices movable against the material to apply pressure for shaping;

continuous compression moulding refers to making indefinite articles by using rotatable devices, e.g. wheels, rollers, calenders;

devices to supply the material to the compression moulding device

**References**

**Limiting references**

This place does not cover:

Injection compressing moulding (i.e. injecting the polymeric material under pressure in a usually open mould and subsequently moving the mould or mould parts to compress the material to achieve the final shape) **B29C 45/561**

### Synonyms and Keywords

In patent documents, the following words/expressions are often used with the meaning indicated:

"compacting" "compression moulding".

### B29C 43/003

{characterised by the choice of material}

**Definition statement**

This place covers:

compression moulding processes characterised by the choice of material, e.g. using organic, inorganic or mineral fillers or fibres, using plasticised particulate materials bonded by resin, recycled materials
References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulding processes characterised by the choice of the material, e.g. wax, aggregates: | B29C 67/24 |
| Pressing of glass: | C03B 11/00 |
| Making brake linings: | F16D 69/00, F16D 2250/0023 |

**B29C 43/006**

{Pressing and sintering powders, granules or fibres}

**Definition statement**

This place covers:
e.g. pressing fleeces made of thermoplastic fibres;

hot-fusion under pressure particles, granules or fibres etc, particles are heated and compressed to partial melt and bond together; thermal bonding under pressure; shaping monoliths

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Sintering (without pressure) | B29C 67/04 |
| Surface fusion and bonding of particles to form voids | B29C 67/205 |
| Moulding processes characterised by the choice of mineral aggregates bonded with resin as the moulding material | B29C 67/242 |
| Prostheses | A61F 2/02 |
| Sintering metallic powders | B22F 3/10 |
| Preheating powders | B29B 13/00 |
| Partial melting of one or more layers to form the bond | B32B 37/04 |
| Sintering fibres | D04H 1/005, D04H 3/16 |
| Making brake linings | F16D 69/00, F16D 2250/0023 |

**B29C 43/021**

{characterised by the shape of the surface}

**Definition statement**

This place covers:

making articles characterised by the shape of the surface
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Grooves</th>
<th>B29C 37/0053</th>
</tr>
</thead>
<tbody>
<tr>
<td>Folding lines</td>
<td>B29C 53/06</td>
</tr>
<tr>
<td>Surface shaping</td>
<td>B29C 59/00</td>
</tr>
<tr>
<td>Moulding of lenses</td>
<td>B29D 11/00009</td>
</tr>
<tr>
<td>Moulding of Fresnel lenses</td>
<td>B29D 11/00269</td>
</tr>
<tr>
<td>Imprinting</td>
<td>B41F</td>
</tr>
<tr>
<td>Embossing machines</td>
<td>B44B 5/00</td>
</tr>
<tr>
<td>Decorative arts</td>
<td>B44C</td>
</tr>
<tr>
<td>Packages or encapsulation of microstructural systems</td>
<td>B81B 7/0032</td>
</tr>
<tr>
<td>Processes for packaging: MEMS</td>
<td>B81C 1/00261</td>
</tr>
<tr>
<td>Fresnel lenses</td>
<td>G02B 3/08</td>
</tr>
<tr>
<td>Apparatus for making LCD's</td>
<td>G02F 1/1303</td>
</tr>
<tr>
<td>Lithographic processes using stamping</td>
<td>G03F 7/0002</td>
</tr>
<tr>
<td>Fine patterning magnetic record carriers</td>
<td>G11B 5/84</td>
</tr>
<tr>
<td>Optical record carriers</td>
<td>G11B 7/26</td>
</tr>
<tr>
<td>Masters, stampers:</td>
<td>G11B 7/261, G11B 7/263</td>
</tr>
<tr>
<td>Making masks on semiconductor bodies</td>
<td>H01L 21/027</td>
</tr>
<tr>
<td>Apparatus for mechanical treatment of semiconductors</td>
<td>H01L 21/67092</td>
</tr>
<tr>
<td>Manufacturing printed circuits</td>
<td>H05K 3/0014</td>
</tr>
<tr>
<td>Laminating circuit boards</td>
<td>H05K 3/4611</td>
</tr>
</tbody>
</table>

B29C 43/027

(having an axis of symmetry (B29C 43/102 takes precedence))

Definition statement

This place covers:

compression moulding symmetrical articles, e.g. balls, ring-like shaped articles, tubular articles

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Apparatus or methods for manufacturing balls</th>
<th>A63B 45/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making spherical articles e.g. balls</td>
<td>B29D 22/04</td>
</tr>
<tr>
<td>Moulded articles with a profiled transverse cross-section</td>
<td>B29L 2031/003</td>
</tr>
<tr>
<td>Ring or ring-like shaped moulded articles</td>
<td>B29L 2031/7096</td>
</tr>
</tbody>
</table>
### B29C 43/04 using movable moulds

**Definition statement**

*This place covers:*

movable moulds with the movement being other than open, closing, clamping, or pressurising, e.g. for curing in a closed mould outside the pressure exerting means, transferring moulds or mould parts between a feeding and a compressing station

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>Reference</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handling of moulds in general</td>
<td>B29C 31/006</td>
</tr>
<tr>
<td>Movable moulds in general</td>
<td>B29C 33/34</td>
</tr>
<tr>
<td>Movable moulds for injection moulding</td>
<td>B29C 45/04</td>
</tr>
<tr>
<td>Movable moulds for blow moulding</td>
<td>B29C 49/30</td>
</tr>
</tbody>
</table>

### B29C 43/06 continuously movable {in one direction, e.g. mounted on chains, belts}

**Definition statement**

*This place covers:*

e.g. moulds or mould parts travelling continuously along a path

### B29C 43/08 with circular movement {, e.g. mounted on rolls, turntables}

**Definition statement**

*This place covers:*

moulds or mould parts mounted on rotating supporting construction, rotary machines, e.g. turntables, drums, carousels, star wheels

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>Reference</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>For injection moulding</td>
<td>B29C 45/06</td>
</tr>
<tr>
<td>For blow moulding</td>
<td>B29C 49/36</td>
</tr>
<tr>
<td>For presses</td>
<td>B30B 11/08</td>
</tr>
</tbody>
</table>
**B29C 43/10**

Isostatic pressing, i.e. using non-rigid pressure-exerting members against rigid parts or dies {(in general B30B 11/001)}

**Definition statement**

*This place covers:*

flexible pressure exerting means, e.g. material characteristics of the pressure exerting member (e.g. special density, composition, syntactic foam)

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Flexible collapsible moulds for facilitating demoulding | B29C 33/50 |
| Applying pressure through membranes | B29C 51/28 |
| Vacuum bagging | B29C 70/44 |
| Hydroforming | B21D 26/033 |
| Bladders for making tires | B29D 30/0654 |
| Flexible pressing means | B30B 5/02 |
| Membrane presses | B30B 9/22 |
| Laminating glass sheets | B32B 17/10853 |
| Vacuum laminating | B32B 37/1018 |

**B29C 43/12**

using bags surrounding the moulding material {or using membranes contacting the moulding material (B29C 70/44 takes precedence; flexible cores for vulcanizing tyres B29D 30/0654)}

**Definition statement**

*This place covers:*

e.g. compression moulding processes by using vacuum or inflatable bags

**B29C 43/22**

of articles of indefinite length {(for articles with reinforcements of substantial or continuous length B29C 70/50)}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Floor coverings obtained by sintering or gluing the granules together | D06N 7/0057 |
B29C 43/24
Calendering

Definition statement
This place covers:
e.g. measuring and regulating calender banks

B29C 43/32
Component parts, details or accessories; Auxiliary operations

Definition statement
This place covers:
e.g. pressure exerting means or methods (mechanical e.g. deformable nets, springs or non mechanical e.g. thermal expansion) e.g. pressure equalising means or methods

References
Limiting references
This place does not cover:
Shaping by using the force created by the liberation of internal stresses to exert pressure B29C 61/006; Bags for isostatic pressure B29C 43/3642; Material characteristics of the isostatic pressure exerting member B29C 43/10

B29C 43/34
Feeding the material to the mould or the compression means {(B29C 43/085 takes precedence)}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Feeding of the material to be moulded in general | B29C 31/04 |

B29C 43/42
for undercut articles

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulds for moulding articles provided with holes in general | B29C 33/0033 |
| Moulds for undercut articles in general | B29C 33/44 |
| Manufacture of work pieces or articles provided with cavities or holes from metallic powder | B22F 5/10 |
B29C 43/44
Compression means for making articles of indefinite length

Definition statement
This place covers:
e.g. exchanging rollers or belts;
e.g. exchanging the coating of rollers;
e.g. adjusting rollers;

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Driving arrangements for rollers | D21G 1/0006 |

B29C 43/46
Rollers

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Rollers for mixing plastic material to be shaped | B29B 7/62 |
| Rollers with deflection compensating systems, e.g. hydraulic systems | F16C 13/028 |

B29C 43/52
Heating or cooling

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Presses plates with heating or cooling means | B30B 15/064 |

B29C 43/56
Compression moulding under special conditions, e.g. vacuum

Definition statement
This place covers:
e.g. compression moulding using vibrations;
e.g. compression moulding while steaming
**B29C 43/58**

**Measuring, controlling or regulating {for bank adjustment in calendering B29C 43/245}**

**Definition statement**

This place covers:
e.g. regulating compression force, by changing according to a predetermined program

**References**

**Limiting references**

This place does not cover:

| measuring and regulating calender parameters, e.g. bank quantity | B29C 43/245 |

**B29C 44/00**

**Shaping by internal pressure generated in the material, e.g. swelling or foaming {; Producing porous or cellular expanded plastics articles}**

**References**

**Limiting references**

This place does not cover:

| Chemical aspects of foaming | C08J 9/00 |

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Metal foams | B22D 25/005 |
| Ceramics foams | C04B 38/00 |

**Glossary of terms**

In this place, the following terms or expressions are used with the meaning indicated:

| reticulated | cell wall membranes are removed, leaving a framework only. |

**Synonyms and Keywords**

In patent documents, the following words/expressions are often used with the meaning indicated:

| "foaming" | "expanding" and "swelling". |
**B29C 44/04**

consisting of at least two parts of chemically or physically different materials, e.g. having different densities

**Definition statement**

This place covers:

e.g. a soft, porous core covered by a skin or lining when they are made in the same procedure

**References**

*Limiting references*

This place does not cover:

- incorporating preformed parts

**B29C 44/182**

{Filling flexible bags not having a particular shape}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

- Filling cushion pads

**B29C 44/188**

{Sealing off parts of the cavities}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

- Insulating elements for vehicles
- Foam in superstructures for vehicles

**B29C 44/20**

for articles of indefinite length

**Definition statement**

*This place covers:*

continuous processes, even if it is followed by a subdivision into separate articles
B29C 44/3415

{Heating or cooling}

Definition statement
This place covers:
particular characteristics of the heating or cooling method

B29C 44/3461

{Making or treating expandable particles}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Feeding moulds with granules                      | B29C 44/445 |
| Making granules                                    | B29B 9/00   |
| under-water, e.g. underwater pelletizers          | B29B 9/065  |

B29C 44/445

{in the form of expandable granules, particles or beads}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Making or treating expandable particles             | B29C 44/3461 |

B29C 44/56

After-treatment of articles, e.g. for altering the shape

Definition statement
This place covers:
Characteristics of methods for working on an already foamed object

B29C 44/569

{Shaping and joining components with different densities or hardness}

Definition statement
This place covers:
e.g. putting a foam layer and a lining in a mould, followed by compression moulding and joining
B29C 44/588
{with means for venting, e.g. releasing foaming gas}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Venting of moulds in general | B29C 33/10 |
| Injection moulds with venting means | B29C 45/34 |

B29C 45/00

Injection moulding, i.e. forcing the required volume of moulding material through a nozzle into a closed mould; Apparatus therefor (injection blow-moulding B29C 49/06)

Definition statement

This place covers:
Injection moulding methods
Injection moulding apparatuses
Articles obtained by injection moulding, as far as these articles are characterised by the injection moulding method

References

Limiting references

This place does not cover:

| Reaction injection moulding, liquid injection moulding | B29C 67/246 |

Special rules of classification

It is desired to identify the obtained articles and the applied materials by allocating the appropriate Indexing Codes as provided in the subclass B29K and B29L.

Particular attention should be paid to the break down Indexing Codes, that are available only at additional informative level.

B29C 45/0001

{characterised by the choice of material}

Definition statement

This place covers:
Injection moulding processes characterised by the plastic material. The group contains documents concerning injection moulding with a special material or a process adapted for a certain material.
References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection moulding characterised by the use of fibres.</td>
<td>B29C 45/0005</td>
</tr>
<tr>
<td>Injection moulding characterised by the use of fillers</td>
<td>B29C 45/0013</td>
</tr>
</tbody>
</table>

B29C 45/0003

(of successively moulded portions rigidly joined to each other)

Definition statement

This place covers:

Injection moulding processes of continuous or endless articles.

EP847112, fig 7,

![Fig. 7](image)

EP826475 fig 1c.

![Fig. 1c](image)
Special rules of classification

Although this group covers a combination of several injection steps, the documents are not classified in B29C 45/16

B29C 45/0005

{using fibre reinforcements}

Definition statement

This place covers:
Injection moulding processes, whereby the fibres are dispersed in the plastic material. The dispersion is usually randomly.

Example EP893228

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Coating reinforcement</th>
<th>B29C 45/14631</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coating fibrous material or fibre containing material</td>
<td>B29C 45/14786</td>
</tr>
<tr>
<td>Resin transfer moulding</td>
<td>B29C 70/48</td>
</tr>
<tr>
<td>Injection moulding with short fibres</td>
<td>(Japanese F-term) 4F206/AB25</td>
</tr>
<tr>
<td>Injection moulding with long fibres</td>
<td>(Japanese F-term) 4F206/AD16</td>
</tr>
</tbody>
</table>
B29C 45/0013
{using fillers dispersed in the moulding material, e.g. metal particles}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Shaping composites comprising fillers only | B29C 70/58 |

Glossary of terms
In this place, the following terms or expressions are used with the meaning indicated:

| Fillers | relatively inert substances in the form of particles, powder, beads, flakes or spheres, which improve the physical properties or increases the bulk or weight of an article and are randomly dispersed in the material, e.g. additives, dyestuff, colouring material, recycled material |

B29C 45/0017
{moulding interconnected elements which are movable with respect to one another, e.g. chains or hinges}

Definition statement
This place covers:
Moulding of movable interconnected elements in a two step moulding process, without applying inserts.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Metal casting of rotational elements: | B22D 19/12 |
| Manufacturing of ventilating devices: | B60H 2001/3492 |

Special rules of classification

Documents contained in this group are NOT additionally classified in B29C 45/16 and/or B29C 45/26

B29C 45/0025

{Preventing defects on the moulded article, e.g. weld lines, shrinkage marks (preventing defects on the preformed parts or layers B29C 45/14836)}

Definition statement

This place covers:

Moulding processes to avoid the occurrence of burrs, sink marks, warping, location of gate marks or the like on the moulded article

EP508732, fig 8

Figure 8
References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applying external gas moulding technology for avoiding shrinkage marks</td>
<td>B29C 45/174</td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensation volume change during moulding</td>
<td>B29C 37/005</td>
</tr>
<tr>
<td>Details relating to the flow path during moulding</td>
<td>B29C 45/0046</td>
</tr>
</tbody>
</table>

B29C 45/0046

{Details relating to the filling pattern or flow paths or flow characteristics of moulding material in the mould cavity}

Definition statement

This place covers:

Moulding processes concerning the filling pattern of flow characteristics. Typically this is related to the moulding of parts having thin and thick sections, e.g. for avoiding weld lines.

EP749821 fig 4

FIG. 4a

FIG. 4b

FIG. 4c
EP666159 fig 1, relates to filling, flow patterns.

EP362648, fig 6

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

Preventing defects on the moulded articles

Special rules of classification
Documents are classified in B29C 45/0046 only, if the inventions concerns only the filling pattern.
Documents are classified in B29C 45/0025 and B29C 45/0046, if the inventions concerns the relation between the filling pattern and the weld line.

**B29C 45/0053**

(combined with a final operation, e.g. shaping (injection-compression moulding B29C 45/561))

**Definition statement**

This place covers:

e.g. irradiation

US20100156007 figure 1,

addition of an insert
**References**

**Limiting references**

This place does not cover:

| Post thermal treatment of articles | B29C 45/7207 |

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| In-mould coating | B29C 37/0028 |

**B29C 45/0055**

**{Shaping}**

**Definition statement**

This place covers:

Moulding processes comprising a shaping step after moulding.

Shaping refers to after treatment by mechanical means, e.g. bending, cutting, drilling, punching.
EP546950 shows in fig 1 & fig 2 a bending step.

---

EP381023
**B29C 45/0062**

{Joined by injection moulding}

**Special rules of classification**
Documents classified in this group are not additionally classified in B29C 45/16

**B29C 45/0081**

{of objects with parts connected by a thin section, e.g. hinge, tear line}

**Definition statement**

*This place covers:*
Moulding processes, whereby the thin section is part of the moulded material

EP775639, figures 3, 4.

---

**References**

**Limiting references**

*This place does not cover:*

Using movable wall parts for making orifices in or through the moulded article  
B29C 45/5675

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Moulding single grooves, ribs, e.g. tear lines in general  
B29C 37/0057


**B29C 45/0082**

{Reciprocating the moulding material inside the mould cavity, e.g. push-pull injection moulding}

**Definition statement**

*This place covers:*

Moulding processes whereby the material is “swung” between several positions in/around the cavity. The material flow is not limited to one direction.

EP188120 figures 2 & 3
EP442255 fig 3,4.

References

Limiting references

This place does not cover:

| Applying vibration to mould parts | B29C 45/568 |
**B29C 45/0084**

{General arrangement or lay-out of plants *(B29C 45/1468 takes precedence)*}

**Definition statement**

*This place covers:*

Plants showing several working positions or operations, e.g. EP576196

![Process Flow Chart](image1)

Lay out of plants, e.g.

EP765726

![Diagram](image2)
References

**Limiting references**

*This place does not cover:*

| Plants for encapsulating articles mounted on a carrier, e.g. lead frame | B29C 45/1468 |

**B29C 45/02**

Transfer moulding, i.e. transferring the required volume of moulding material by a plunger from a "shot" cavity into a mould cavity

**Definition statement**

*This place covers:*

Transfer moulding, whereby a shot cavity is provided within the mould. The material is transferred from the shot cavity into the mould cavity/cavities. The plunger is also part of the mould, the transfer takes place within a closed mould.
Relationships with other classification places

The difference between transfer moulding and compression moulding, is that in case of the latter, the material is compressed while closing the mould and not by separate mould parts after closing.

A typical example of compression moulding

EP510414, fig 3 & 4
### References

**Limiting references**

This place does not cover:

| Resin transfer moulding | B29C 70/48 |

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Compression moulding with pressing members independently movable of the parts for opening and closing the mould | B29C 43/361 |

### B29C 45/021

**{Plunger drives; Pressure equalizing means for a plurality of transfer plungers}**

**Definition statement**

This place covers:

Drives or pressure equalizing means.


![Diagram of plunger drives and pressure equalizing means](image-url)
**B29C 45/03**

Injection moulding apparatus (transfer moulding [B29C 45/02](#))

**Definition statement**

*This place covers:*

The configuration of the injection moulding apparatus
References

Limiting references

This place does not cover:

Injection apparatuses combining the feeding means with opening, closing or clamping means

B29C 45/03

{Injection pistols}

Definition statement

This place covers:

Mainly hand-held injection moulding machines
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spray-up equipment for coating a mould, a core or other equipment:</td>
<td>B29C 41/365</td>
</tr>
<tr>
<td>Hand tools for applying fluid in general</td>
<td>B05C 17/00</td>
</tr>
</tbody>
</table>
**B29C 45/04**

using movable moulds {or mould halves} (**B29C 45/08** takes precedence)

**Definition statement**

*This place covers:*

EP0268174

---

**References**

**Limiting references**

*This place does not cover:*

| Movable moulds for making multilayered or multicoloured articles | **B29C 45/1615** |
B29C 45/0408
{involving at least a linear movement (B29C 45/0433 takes precedence)}

Definition statement

This place covers:
US20060172039
B29C 45/0416
{co-operating with fixed mould halves}

**Definition statement**

*This place covers:*

DE29517714U
B29C 45/0433
{mounted on a conveyor belt or chain}

Definition statement
This place covers:
EP0577169
**B29C 45/0441**

{involving a rotational movement (B29C 45/06 takes precedence)}

**Definition statement**

*This place covers:*

DE10120267
References

Limiting references

This place does not cover:

| Rotatable moulds or mould halves mounted on a turntable | B29C 45/06 |
B29C 45/045
{mounted on the circumference of a rotating support having a rotating axis perpendicular to the mould opening, closing or clamping direction}

Definition statement
This place covers:
EP42012

Synonym and Keywords
In patent documents, the following words/expressions are often used with the meaning indicated:
"circumference" "surface"

B29C 45/06
{mounted} on a turntable {, i.e. on a rotating support having a rotating axis parallel to the mould opening, closing or clamping direction}

Definition statement
This place covers:
Injection moulding machines comprising a turntable, being a horizontal moving table with complete moulds or mould halves (the mould halves are covered by B29C 45/062). The rotation axis is normally parallel to the open/closing axis of the moulds.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

- Turntables for presses

B29C 45/062

{carrying mould halves co-operating with fixed mould halves}

Definition statement

This place covers:

EP300068 fig 1
Definition statement

This place covers:
Injection moulding processes, whereby EACH moulding cycle, the injection unit is MOVED and removed.
US3924994, fig 1 & 2.

Fig. 1

Fig. 2
B29C 45/076
{cooperating with two or more moulds}

Definition statement

This place covers:
EP438721 fig 1,2 position A & B
**B29C 45/08**

moving with the mould during the injection operation

**Definition statement**

*This place covers:*

Injection moulding processes, whereby the injection unit and the mould move at the same time.

FR2155808 dashed line 5

---

**B29C 45/10**

using moulds or injection units usable in different arrangements or combinations to each other

**Definition statement**

*This place covers:*

Different arrangements or combinations concerning the mould AND the injection unit.
Different arrangement of the mould and injection unit DE2543448, fig 1 & 2

Note that the different arrangement or combination are not related to one moulding cycle but to a long period of use.

Different combination of the mould and injection unit EP138169, fig 1 & 2
References

Limiting references
This place does not cover:

| Moulds in different combinations | B29C 45/2673 |

B29C 45/12

using two or more fixed moulds, e.g. in tandem {{B29C 45/076 takes precedence}}

Definition statement
This place covers:
The INJECTION UNIT cooperates with BOTH MOULDS through a runner channel.

EP326175, figure 16

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Stack moulds | B29C 45/32 |
**B29C 45/125**

{using a material distributing system}

**Definition statement**

*This place covers:*

EP265603 fig 1

EP13118 fig 2,
B29C 45/13

using two or more injection units co-operating with a single mould

Definition statement

This place covers:
Several injection units, typically for quickly filling one mould.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Multi-component injection moulding | B29C 45/16 |

**B29C 45/14**

incorporating preformed parts or layers, e.g. injection moulding around inserts or for coating articles {((B29C 45/1671 takes precedence)}

**Definition statement**

This place covers:

EP492052 fig 1 & 2, label A.

---

**Synonyms and Keywords**

*In patent documents, the following words/expressions are often used as synonyms:*

- "inserts", "preformed parts", "articles", "films" and "preformed layers"

**B29C 45/14008**

{Inserting articles into the mould (B29C 45/14827 takes precedence)}

**Definition statement**

This place covers:

Usually robots for inserting the to be overmoulded articles into the mould cavity
Relationships with other classification places

Attention is being paid to the difference between B29C 45/14008 and B29C 45/14065. B29C 45/14008 concerns the inserting of the articles INTO the mould. B29C 45/14065 concerns the positioning of the already inserted article WITHIN the mould (cavity).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Handling of preformed parts in general | B29C 31/008 |
| Inserting labels or films into blow moulds | B29C 49/2408 |
| Feeding of linings or labels for thermoforming | B29C 51/165 |
| Locating or holding inserts in metal casting | B22D 17/24 |
| Orienting articles in an article feeder for assembling machines | B23P 19/002 |

B29C 45/14016

{Intermittently feeding endless articles, e.g. transfer films, to the mould (B29C 45/14262 takes precedence)}

Definition statement

This place covers:

Non-continuous feeding of a film
B29C 45/14024

{and punching or cutting a portion from the endless articles during mould closing}

Definition statement

This place covers:

EP231670, punch mechanism 3
**B29C 45/14032**

{Transferring the inserts from a storage space inside the mould to the mould cavity}

**Definition statement**

*This place covers:*

EP37032 fig 3 & 4.

**FIG. 3**

Inserts are introduced in storage space 10 inside the mould and when the mould is closed, one insert is transferred each moulding cycle by transfer means 27.
**B29C 45/14065**

(topic: Positioning or centering articles in the mould)

**Definition statement**

_This place covers:_

EP257681 pin 110 in fig 11 (means are here part of the insert)

![Diagram](image)

**FIG. 11**

**Relationships with other classification places**

Where **B29C 45/14008** concerns the inserting of the insert INTO the mould, **B29C 45/14065** concerns the positioning or centering in the cavity of the already inserted insert.

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Moulds with incorporated means for centering inserts in general | B29C 33/12 |
| Moulds using magnetic means for positioning inserts in general | B29C 33/16 |
| Moulds using vacuum to position inserts in general | B29C 33/18 |
B29C 45/14073
{using means being retractable during injection}

Definition statement
This place covers:
EP257681, retracting pins
**B29C 45/1418**

{the inserts being deformed or preformed, e.g. by the injection pressure}

**Definition statement**

*This place covers:*

EP782908 insert S

---

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Shaping linings by compression of the moulding material | B29C 43/184 |

---

**B29C 45/14196**

{the inserts being positioned around an edge of the injected part}

**Definition statement**

*This place covers:*

Moulding of edge wrapped articles

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Lining or sheeting by folding, winding, bending or the like | B29C 63/04 |

---
**B29C 45/14221**
{by tools, e.g. cutting means}

**Definition statement**

*This place covers:*
Deformation by mechanical means

EP721831, fig 1-3,
EP592768, fig 1

P517614, parts 11a, fig 1

FIG. 1

FIG. 2
References

Limiting references

This place does not cover:

| Deformation by injection pressure          | B29C 45/1418, B29C 45/14196 |

B29C 45/14311

{using means for bonding the coating to the articles (B29C 45/14795 takes precedence)}

Definition statement

This place covers:

Bonding means, e.g. adhesives, chemical means, locking configurations

EP976519, perforation in fig 2.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Measures or configurations for obtaining an anchoring effect in contacting areas general | B29C 37/0078 |
**B29C 45/14336**

{Coating a portion of the article, e.g. the edge of the article (B29C 45/14573 and B29C 45/14598 take precedence)}

**Definition statement**

*This place covers:*

Moulding processes, whereby a part of the insert is outside the cavity during the moulding process.

EP1013392 fig 7, insert 4, coating 6 & 8

EP727289, only handle of the insert

**References**

**Limiting references**

*This place does not cover:*

Coating the edge of articles at spaced locations

| B29C 45/14573 |
Coating a portion of tubular articles

**B29C 45/14344**

{Moulding in or through a hole in the article, e.g. outsert moulding}

**Definition statement**

*This place covers:*

outsert moulding: EP65220, insert 8 is, at least partially OUTSIDE the moulding material 14

![Diagram 5](image)

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Permeable inserts</th>
<th>B29C 45/14795</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moulding in general on a relative small portion of the preformed part e.g. outsert moulding</td>
<td>B29C 70/74</td>
</tr>
</tbody>
</table>

**B29C 45/14377**

{using an additional insert, e.g. a fastening element}

**Definition statement**

*This place covers:*

The use of an additional fastening element in combination with partial coating of an insert only (note: B29C 45/14467 takes precedence)
EP468713, fig 2 insert 2 and additional fastening means 12

EP436438 with additional fastening means 22 & 27 (fig 2 & 3).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Moulding in general on a relative small portion of preformed parts to be joined

**B29C 70/845**
**B29C 45/14385**

{Coating a portion of a bundle of inserts, e.g. making brushes}

**Definition statement**

This place covers:

EP676268

---

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brushes characterised by mouldable materials for fixing the bristles</td>
<td>A46B 3/04</td>
</tr>
<tr>
<td>Moulding or casting a brush body around bristles or tufts</td>
<td>A46D 3/005</td>
</tr>
</tbody>
</table>

---

**Fig. 10**

![Diagram showing the coating of a portion of a bundle of inserts, e.g. making brushes.](image-url)
Definition statement

This place covers:

GB1431460, fig 2 corner 5;

US4778550 end part 22
**B29C 45/14418**

{Sealing means between mould and article}

**Definition statement**

*This place covers:*

The application of separate sealing means, as well as sealing by mould parts, e.g. core mould and cavity walls

EP0845340-fig 4, seals 140 & 142,

JP63-67127, sealing members 3 & 4
JP63-89313, seals 6a & 6b,

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Sealing means for sealing off parts of the insert during moulding in general | B29C 33/0044 |

B29C 45/14434

{Coating brittle material, e.g. glass (B29C 45/14377, B29C 45/14418 take precedence)}

Definition statement

This place covers:

Moulding on glass inserts

Moulding on windscreens, whereby the windscreen is not made out of the brittle material glass, but out of a transparent plastic.
B29C 45/14467

{Joining articles or parts of a single article (B29C 45/14377, B29C 45/14385, B29C 45/14581, B29C 45/14614 and B29C 45/006 take precedence)}

Definition statement

This place covers:

EP792960, fig 2 parts 1 & 7, connected by material 10

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joining articles moulded in separate cavities as final operation</td>
<td>B29C 45/006</td>
</tr>
<tr>
<td>Joining tubular articles</td>
<td>B29C 45/14614</td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joining preformed parts by the expansion of the moulding material</td>
<td>B29C 44/1228</td>
</tr>
<tr>
<td>Joining of preformed parts by moulding</td>
<td>B29C 65/70</td>
</tr>
<tr>
<td>Moulding in general on preformed parts to be joined</td>
<td>B29C 70/84</td>
</tr>
<tr>
<td>Casting around parts for joining</td>
<td>B22D 19/04</td>
</tr>
<tr>
<td>Key-type connections formed by solidification of injected material</td>
<td>F16B 3/005</td>
</tr>
</tbody>
</table>
B29C 45/14475

{Joining juxtaposed parts of a single article, e.g. edges of a folded container blank}

Definition statement

This place covers:

FR2272816 fig 1 & 2

GB1360801 fig 1 part 5
References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Machines for making boxes by folding sheets combined with injection moulding for joining opposed edges | B31B 50/26, B31B 50/61 |

Glossary of terms
In this place, the following terms or expressions are used with the meaning indicated:

| Juxtaposed | is being defined as lying next to each other within the same plane, while the juxtaposed parts touch each other along one edge |

B29C 45/14491
{Injecting material between coaxial articles, e.g. between a core and an outside sleeve for making a roll}

Definition statement
This place covers:
WO0024561, fig 2, parts 31 and 33 connected by plastic 29

![FIG. 2](image)
B29C 45/14508

{Joining juxtaposed sheet-like articles, e.g. for making trim panels}

Definition statement

This place covers:
EP953423 fig 1-3, articles 11-13

EP376263, fig 4, sheets 1a, 1b.

EP376263, fig 4, sheets 1a, 1b.
B29C 45/14549

{Coating rod-like, wire-like or belt-like articles (B29C 45/14426 takes precedence)}

Definition statement

This place covers:

EP719628, figure 1, rod like insert 21
EP33848, figure 5 insulator insert 11

WO9107934, figure 3.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

Assembly methods and manufacture of light guides  G02B 6/3833
B29C 45/14565

{at spaced locations, e.g. coaxial-cable wires}

Definition statement

This place covers:

EP225846, fig 4 wire 3, several plastic locations 21

EP221851, fig 6. Insert 1, plastics 22,23
B29C 45/14573
{Coating the edge of the article, e.g. for slide-fasteners}

Definition statement

This place covers:
EP641637 Insert 1, 24 at THE EDGE, at SPACED LOCATIONS.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Reference Description</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure die casting of slide fasteners</td>
<td>B22D 17/16</td>
</tr>
<tr>
<td>Producing fasteners with separate interlocking members</td>
<td>B29D 5/02</td>
</tr>
</tbody>
</table>
B29C 45/14581

{Coating the cross-over points of articles in the form of a network}

**Definition statement**

*This place covers:*

GB1128619 Inserts 20 & 20, plastic 18,

FR1435472, figure 2, wire 11 & 21, plastic 20

B29C 45/1459

{Coating annular articles}

**Definition statement**

*This place covers:*

Insert moulding processes for making rollers, wheels, bearings, tyres
EP712708 fig 1. Insert 21 & 22 - annular cavity C.

EP287495, fig 1. Retreading of a tyre.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Producing roller bodies</th>
<th>B29D 99/0032</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembling wheels on an axle for making a castor</td>
<td>B60B 33/0028</td>
</tr>
<tr>
<td>Guiding rollers, wheels or the like formed by or on the outer element of a single bearing</td>
<td>F16C 13/006</td>
</tr>
</tbody>
</table>

B29C 45/14598

{Coating tubular articles}

Definition statement

This place covers:

US6210621, fig 4-6 Part 61 is moulded onto part 8d.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Moulding on the end part of tubular articles in general | B29C 70/766 |
| Producing rollers of cylinders                           | B29D 99/0035 |

Special rules of classification

Note that although the article is often coated only partly, the classification is only done in B29C 45/14598, since it takes precedence over B29C 45/14336.
B29C 45/14614

{Joining tubular articles}

Definition statement

This place covers:

EP79575, fig 1 & 2. Plastic 12 and 14 connect the tubes 1, 2 and 3.
B29C 45/14622
{Lining the inner or outer surface of tubular articles}

Definition statement

This place covers:
WO9317847, fig 1-6, tubular article 12, core inside for pressure compensation, lining 30
B29C 45/14631

{Coating reinforcements (fibre reinforcements B29C 45/0005)}

Definition statement

This place covers:

Overmoulding of reinforcements, being an insert not forming a part of the moulding material before the moulding process:

e.g. overmoulding single wires or fibres, overmoulding metal parts used as reinforcement.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection moulding using fibre reinforced plastics</td>
<td>B29C 45/0005</td>
</tr>
<tr>
<td>Incorporating articles with special properties</td>
<td>B29C 45/1478</td>
</tr>
<tr>
<td>Resin transfer moulding</td>
<td>B29C 70/48</td>
</tr>
</tbody>
</table>
B29C 45/14639
{for obtaining an insulating effect, e.g. for electrical components}

Definition statement
This place covers:
Overmoulding only when the disclosed moulding process is of importance due to the potentially very wide scope of possible applications (see also the informative references).

EP446489, fig 11

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>IC or chip cards</th>
<th>B42D 25/00, G06K 19/07745</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cables, conductors</td>
<td>H01B 13/06</td>
</tr>
<tr>
<td>Resistors</td>
<td>H01C 17/02, H01C 1/034</td>
</tr>
<tr>
<td>Transformer, windings</td>
<td>H01F 41/127, H01F 27/022, H01F 41/005</td>
</tr>
<tr>
<td>Capacitors</td>
<td>H01G 13/00, H01G 4/002</td>
</tr>
<tr>
<td>LEDs</td>
<td>H01L 33/00</td>
</tr>
<tr>
<td>Plugs, electric contacts</td>
<td>H01R 43/24</td>
</tr>
<tr>
<td>Repairing electric cables, joints, connectors</td>
<td>H02G 1/00, H02G 1/145</td>
</tr>
<tr>
<td>Machine engines, motors</td>
<td>H02K 15/12</td>
</tr>
<tr>
<td>Sealed casings</td>
<td>H05K 5/06</td>
</tr>
<tr>
<td>Apparatus or processes specially adapted for manufacturing or adjusting assemblages of electric components</td>
<td>H05K 13/00</td>
</tr>
</tbody>
</table>
B29C 45/14647

{Making flat card-like articles with an incorporated IC or chip module, e.g. IC or chip cards}

Definition statement

This place covers:

Moulding processes, whereby the chip is embedded during the moulding process.

EP481557

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Identity cards and the like</th>
<th>B42D 25/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting details of chip cards in general</td>
<td>G06K 19/07745</td>
</tr>
</tbody>
</table>
**B29C 45/14655**

{connected to or mounted on a carrier, e.g. lead frame}

**Definition statement**

*This place covers:*

EP489349, fig 4, chip 22, lead frame 18. Runner 412 & Gate 416, 418. The moulding step in this group usually concerns transfer moulding.

![FIG 4](image)

**Relationships with other classification places**

The scope of this group is small in comparison to a typical related product group like H01L 21/565, since B29C 45/14655 is limited to disclosures related to the moulding process as such.

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Moulds for encapsulating semi-conductors</th>
<th>H01L 21/565</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus for sealing, encapsulating for manufacturing or treating semiconductor or solid state devices</td>
<td>H01L 21/67126</td>
</tr>
</tbody>
</table>
**B29C 45/1468**

{Plants therefor}

**Definition statement**

*This place covers:*

EP825006, fig 1. Loading, unloading, etc.

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Plants in general</th>
<th>B29C 45/0084</th>
</tr>
</thead>
</table>

**B29C 45/1468**

{Coating articles provided with a decoration}

**Relationships with other classification places**

In **B29C 45/1468**, the insert is the decoration itself or the insert comprises a decoration and nothing more.

In the case with a plurality of layers where the decoration layer is one of them, the classification is **B29C 45/1481**.

Furthermore, typical for **B29C 45/1468** is that the moulding process is adapted or optimised for coating articles with a decoration.

Standard film overmoulding is classified **B29C 45/1477** even if the film is provided with a decoration.
WO98/09790, fig 2 & 5, insert 18 and plastic 28.

**Fig.2**

**Fig.5**

**References**

**Limiting references**

*This place does not cover:*

| Incorporating decorated single layer or multi layered films by standard moulding processes | B29C 45/14778, B29C 45/14811 |
| Applying transfer foils | B29C 45/14827 |

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

| Decoration | A film provided with ink, paint or like means to create a decorative effect or information. |
B29C 45/14754

{being in movable or releasable engagement with the coating, e.g. bearing assemblies}

**Definition statement**

*This place covers:*

Overmoulding inserts that can move relatively to the plastic after finishing the moulding process. Typically applied for making bearings and to preventing adhesion.

EP27770, insert 37 and plastic 16.

---

**FIG. 4**

---

B29C 45/14778

{the article consisting of a material with particular properties, e.g. porous, brittle}

**Definition statement**

*This place covers:*

E.g. moulding on films

**Special rules of classification**

In this group, it is of upmost importance that the material, condition or the property of the insert is identified by allocating the appropriate Indexing Code as provided in the subclass **B29K**
**B29C 45/14786**

{Fibrous material or fibre containing material, e.g. fibre mats or fibre reinforced material}

**Definition statement**

*This place covers:*

Moulding processes whereby inserts are coated, but not impregnated

EP547625, insert 13 is not completely impregnated but coated at only one side.

**Relationships with other classification places**

The difference between B29C 45/14786 and resin transfer moulding (B29C 70/48) is the way of coating.

In the group B29C 45/14786, the fibrous insert is not completely impregnated but coated at only one side.
A process, whereby an insert of fibrous material is completely impregnated refers to resin transfer moulding, even if the process is done by injection moulding.

Coating of single fibres/wires is classified B29C 45/14631

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Coating reinforcement</th>
<th>B29C 45/14631</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin transfer moulding</td>
<td>B29C 70/48</td>
</tr>
</tbody>
</table>

B29C 45/14795

{Porous or permeable material, e.g. foam}

Definition statement

This place covers:

EP743155 fig 8a-8d, directly injection on two layers of foam.


**Relationships with other classification places**

Note the difference between B29C 45/14795 and B29C 45/14811.

Moulding processes, whereby material is injected directly on foam, is covered by B29C 45/14795.

In the case of a multilayer insert where one of the layers consist of foam, the classification is B29C 45/14811.

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Coating multilayered articles | B29C 45/14811 |
**B29C 45/14811**  
{Multilayered articles (B29C 45/14827 takes precedence)}

**Definition statement**

This place covers:

EP1025973, fig 1, release layer, protecting layer, etc.

---

**Fig. 1**

---

Injection fig 7 & 8.

---

**Fig. 7**

---

**Fig. 8**

---

**Relationships with other classification places**

Concerning the preference of B29C 45/14827, it should be taken into account that this preference concerns either a double layered product where one layer is the transfer foil or a multilayered product, but were the invention concerns the use transfer foil as such (the identity of the other layers are not important for the invention).
Moulding processes, where the invention concerns the making of the multilayered inserts and where the fact that one of the layers can be removed is only disclosed on the level of additional information, is covered by the group B29C 45/14811.

References

Limiting references

This place does not cover:

| Insert and adhesive layer only | B29C 45/14311 |
| Insert with only decoration, paint, ink | B29C 45/14688 |
| Coating a porous layer | B29C 45/14795 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| laminated inserts overmoulded by injection moulding (Japanese F-term) | 4F206/AD20, 4F206/AG03 |

Special rules of classification

In this group, it is highly desirable to identify every layer of the insert by allocating the appropriate Indexing Code as provided in the subclass B29K, or even the ones provided in B29L.

Typical examples:

Fabric layers: B29K 2713/00

Scratch resistant layers, Abrasion resistant layers, protection layers: B29K 2995/0089

Barrier layers for gases: B29K 2995/0067

Decorative layers: B29K 2995/002

Porous layers, foam layers: B29K 2715/003

Adhesive layers: B29K 2715/006

Paint layers: B29L 2009/006

Metal layers: B29K 2705/00, B29L 2009/003

Layers with a metalized surface: B29L 2009/008

Hydrophobic layers: B29K 2995/0093

Hologram layers: B29L 2031/7224

B29C 45/14819

{the inserts being completely encapsulated}

Definition statement

This place covers:

Making of golf balls by insert moulding
References

Limiting references

This place does not cover:

Completely encapsulating reinforcement

Informative references

Attention is drawn to the following places, which may be of interest for search:

Positioning articles in the mould by means being retractable during the injection

B29C 45/14827

{using a transfer foil detachable from the insert}

Definition statement

This place covers:

E.g. applying transfer foils to obtain decorative moulded articles.

Multilayered inserts whereby one layer is transfer foil to be removed from the remaining insert during the moulding process.
WO9516555, the dye material is transferred from the support layer to the plastic, the support layer is afterwards removed.

B29C 45/16

Making multilayered or multicoloured articles {(B29C 45/0062 takes precedence; feeding colouring materials into the injection unit B29C 45/1816)}

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection moulding of successively moulded portions rigidly joined to each</td>
<td>B29C 45/0003</td>
</tr>
<tr>
<td>other</td>
<td></td>
</tr>
<tr>
<td>Injection moulding of interconnected elements which are movable with</td>
<td>B29C 45/0017</td>
</tr>
<tr>
<td>respect to each other</td>
<td></td>
</tr>
<tr>
<td>Joining articles injection moulded in separate cavities by injection</td>
<td>B29C 45/0062</td>
</tr>
<tr>
<td>moulding as final operation</td>
<td></td>
</tr>
</tbody>
</table>

B29C 45/1615

{The materials being injected at different moulding stations}

Special rules of classification

If of general interest, classification as provided in the B29C 45/04 and it subgroups can be allocated to documents classified in this group, typically at additional information level to identify the type of mould movement. Exceptionally the classification in B29C 45/04 or its subgroup can be added at inventive level, if the alleged invention relates to the movement of the mould, whereby said movement is of general interest and use.
B29C 45/1634
{with a non-uniform dispersion of the moulding material in the article, e.g. resulting in a marble effect}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Co-extruding a multicoloured striated pattern | B29C 48/175 |

B29C 45/1639
{Removable partitions between adjacent mould cavity portions}

Definition statement
This place covers:
Multi-component injection moulding processes whereby the second cavity is present before movement of the displaceable mould part.

B29C 45/1642
{having a "sandwich" structure (B29C 45/1603 takes precedence)}

References

Limiting references
This place does not cover:

| Multiway nozzles | B29C 45/1603 |

B29C 45/1646
{Injecting parison-like articles (B29C 45/1643 takes precedence)}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Blow moulding of parisons with at least one injected layer | B29C 49/221 |

B29C 45/1671
{with an insert}

Special rules of classification
In this class it is highly desirable to identify all aspects related to insert moulding by allocating the appropriate classification as provided for in B29C 45/14 and subgroups at additional information level.
**B29C 45/1675**

(using exchangeable mould halves)

**References**

*Limiting references*

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-component injection moulding using different moulding stations</td>
<td>B29C 45/1615</td>
</tr>
</tbody>
</table>

**B29C 45/1684**

{Injecting parison-like articles (*B29C 45/1625, B29C 45/1643* and *B29C 45/1646* take precedence)}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blow moulding of parisons with at least one injected layer</td>
<td>B29C 49/221</td>
</tr>
</tbody>
</table>

**B29C 45/17**

Component parts, details or accessories; Auxiliary operations

**Definition statement**

This place covers:

- filters not in the nozzle located
- exchanging runner channels
- locking of mold halves during transport

**B29C 45/1701**

{using a particular environment during moulding, e.g. moisture-free or dust-free}

**Definition statement**

This place covers:

- Moulding in an environment of inert gasses, reactive gasses, e.g. for preventing mould sweating or plastic oxidation

**References**

*Limiting references*

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection moulding in vacuum environment</td>
<td>B29C 45/34</td>
</tr>
</tbody>
</table>
Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Casting under special conditions</th>
<th>B29C 39/42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression moulding under special conditions</td>
<td>B29C 43/56</td>
</tr>
<tr>
<td>Blow moulding in a particular environment</td>
<td>B29C 49/46</td>
</tr>
<tr>
<td>Moulding in general using a particular environment</td>
<td>B29C 2791/005</td>
</tr>
<tr>
<td>Clean rooms for manipulators</td>
<td>B25J 21/005</td>
</tr>
</tbody>
</table>

B29C 45/1703

[Introducing an auxiliary fluid into the mould (B29C 45/1701 takes precedence)]

Definition statement

This place covers:
the application of cooling or heating fluids as auxiliary fluid, counterpressure methods

B29C 45/1704

{the fluid being introduced into the interior of the injected material which is still in a molten state, e.g. for producing hollow articles (B29C 45/1732 and B29C 45/1734 take precedence; injection blow-moulding B29C 49/06)}

Definition statement

This place covers:
IGM (internal gas moulding)

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| EGM (external gas moulding) | B29C 45/174 |

B29C 45/1706

{using particular fluids or fluid generating substances}

Definition statement

This place covers:
E.g. the use of a plurality of gasses, refrigerating gasses, and other substances in combination with standard fluid
B29C 45/1735

{Nozzles for introducing the fluid through the mould gate, e.g. incorporated in the injection nozzle}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Blow needles for blow moulding | B29C 49/58 |

B29C 45/174

{Applying a pressurised fluid to the outer surface of the injected material inside the mould cavity, e.g. for preventing shrinkage marks}

Definition statement

This place covers:

EGM (External Gas Moulding)

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| IGM | B29C 45/1704 |

Special rules of classification

This technology is mainly applied for avoiding shrinkage marks, however these documents are not additionally being classified in B29C 45/0025

B29C 45/1742

{Mounting of moulds; Mould supports (mounting of exchangeable mould inserts B29C 45/2675)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Mounting of moulds in general | B29C 33/305 |
| Mould plates mounted on frames | B29C 33/307 |
| Mounting of stampers | B29C 45/263 |
B29C 45/1744

{Mould support platens}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Means for maintaining press tables or press platens against deflection | B30B 15/007 |

B29C 45/1747

{Tie-rod connections}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Mounting of press columns in presses | B30B 15/045 |

B29C 45/1748

{Retractable tie-rods}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Mounting of press columns in presses | B30B 15/045 |

B29C 45/1751

{Adjustment means allowing the use of moulds of different thicknesses}

Definition statement

This place covers:

the control and regulation of mould thickness adjustment

B29C 45/1753

{Cleaning or purging, e.g. of the injection unit (B29C 45/24 takes precedence)}

Definition statement

This place covers:

cleaning the injection unit

cleaning the mould
References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Cleaning of moulds and cores in general | B29C 33/72 |
| Cleaning extruder parts | B29C 48/27 |

B29C 45/1756

{Handling of moulds or mould parts, e.g. mould exchanging means (moulds per se B29C 45/26)}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Handling of moulds in general | B29C 31/006 |
| Mounting of moulds | B29C 33/305 |

B29C 45/176

{Exchanging the injection unit or parts thereof}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Exchanging extruder parts | B29C 48/256 |

B29C 45/1761

{Means for guiding movable mould supports or injection units on the machine base or frame; Machine bases or frames (B29C 45/1747 takes precedence)}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Mould plates mounted on frames: | B29C 33/307 |
**B29C 45/1769**

{Handling of moulded articles or runners, e.g. sorting, stacking, grinding of runners}

**Definition statement**

This place covers:

Sorting, guiding, stacking, grinding

**References**

**Limiting references**

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>shaping of moulded articles</td>
<td>B29C 45/0055</td>
</tr>
<tr>
<td>heating and/or cooling moulded parts</td>
<td>B29C 45/7207</td>
</tr>
</tbody>
</table>

**B29C 45/1774**

{Display units or mountings therefor; Switch cabinets}

**Definition statement**

This place covers:

(mechanical) features of the display unit itself.

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>using visualisation means in moulding processes general</td>
<td>B29C 2037/906</td>
</tr>
</tbody>
</table>

**B29C 45/1775**

{Connecting parts, e.g. injection screws, ejectors, to drive means}

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive connections for presses</td>
<td>B30B 15/068</td>
</tr>
</tbody>
</table>

**B29C 45/1777**

{Nozzle touch mechanism}

**Definition statement**

This place covers:

Adjusting the nozzle in respect to the mould
B29C 45/18

Feeding the material into the injection moulding apparatus {i.e. feeding the non-plastified material into the injection unit}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Dispensing moulding material from hoppers in general</th>
<th>B29C 31/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding of the material to be moulded</td>
<td>B29C 31/04</td>
</tr>
<tr>
<td>Feeding the material to be extruded</td>
<td>B29C 48/285</td>
</tr>
</tbody>
</table>

B29C 45/1808

{Feeding measured doses}

Definition statement

This place covers:

feeding of tablets, preforms

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Injection of preformed charges of material           | B29C 45/462 |

B29C 45/1816

{Feeding auxiliary material, e.g. colouring material}

Definition statement

This place covers:

E.g. feeding auxiliary material into the runner channel, the auxiliary material can for example be recycled material or fibre reinforcements

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Feeding additives to the extruder                      | B29C 48/29  |
**B29C 45/1858**

{Changing the kind or the source of material, e.g. using a plurality of hoppers}

**Definition statement**

*This place covers:*

Changing the feed from hoppers containing the same material or different materials, using one hopper to which different materials are supplied

**Material switches**

**B29C 45/20**

**Injection nozzles** {{B29C 45/1603 takes precedence}}

**Definition statement**

*This place covers:*

The machine nozzle, injecting the moulding material into the mould

**References**

**Limiting references**

*This place does not cover:*

| Machine nozzles specially adapted for multi-component injection moulding | B29C 45/1603 |

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Runner nozzles, i.e. the nozzles located within the mould | B29C 45/27 |

**B29C 45/22**

**Multiple nozzle systems**

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Using a material distribution system for two or more fixed moulds | B29C 45/125 |

**B29C 45/231**

{Needle valve systems therefor}

**Definition statement**

*This place covers:*

needles valves that are pushed against a seat inside of a nozzle.
B29C 45/24

Cleaning equipment

Definition statement
This place covers:
all filters, when they are located upstream of the nozzle within the injection unit.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Filters in the mould</th>
<th>B29C 45/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filters in extrusion nozzles or dies</td>
<td>B29C 48/69</td>
</tr>
<tr>
<td>Filtering material to be shaped</td>
<td>B29B 13/10</td>
</tr>
</tbody>
</table>

B29C 45/26

Moulds

Definition statement
This place covers:
Moulds for particular articles
EP263575

Special rules of classification
Attention for the assignment of the Indexing Codes as provided in the subclass B29L!
B29C 45/2602

{Mould construction elements}

Definition statement

This place covers:

DE4337942, fig 1 Klinkenzug (=constructional element) to allow the several mould elements to move in a certain order.

DE4124590, fig 4, interconnecting elements
B29C 45/2606

{Guiding or centering means}

Definition statement

This place covers:
Guiding and centering of the moulds relatively to each
Guiding and centering a mould half on the mould carrier plate
DE1951908, fig 2,
US5776517, cf. centering means 10

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Centering mould halves or parts in general | B29C 33/303 |
B29C 45/2608
{Mould seals}

Definition statement

This place covers:
EP958908, Element 106 is a sealing element.

References

Limiting references

This place does not cover:
Applying a sealing means as an insert [B29C 45/14418]

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Moulds in general provided with sealing means | B29C 33/0038 |
| Compression moulds provided with means to avoid flashes | B29C 43/38 |
| Die seals for pressure casting | B22D 17/2227 |
B29C 45/261
{having tubular mould cavities}

Definition statement
This place covers:
EP852339 optical connectors, fig 7b, 51,52 = tubular

FIG. 7A

FIG. 7B
EP501091, fittings, element G in figure 7

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Producing pipe or pipe joints</th>
<th>B29D 23/001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrules for optical fibres</td>
<td>G02B 6/3885</td>
</tr>
</tbody>
</table>

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubular</td>
<td>refers to being open at both ends and hollow</td>
</tr>
</tbody>
</table>
B29C 45/2612
{for manufacturing tubular articles with an annular groove}

Definition statement
This place covers:
DE2633050 see element 13, fig 2.
DE2757756

B29C 45/2616

{having annular mould cavities}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Producing tyres or parts thereof by injection moulding

B29D 30/0678

B29C 45/262

{provided with unscrewing drive means (unscrewing means outside the mould B29C 45/178)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Moulds in general for stripping articles from a mould core using a rotating movement: to unscrew articles

B29C 33/446

Discharging articles by stripping from a mould core using a rotating movement: to unscrew articles

B29C 37/0021
B29C 45/2624
{provided with a multiplicity of wall-like cavities connected to a common cavity, e.g. for battery cases}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Producing casings, e.g. accumulator cases | B29D 99/006 |

B29C 45/2626
{provided with a multiplicity of narrow cavities connected to a common cavity, e.g. for brushes, combs}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulds with deep narrow cavities in general | B29C 33/0027 |
| Making of toothbrushes | A46D 3/005, A46B 1/00 |

B29C 45/2628
{with mould parts forming holes in or through the moulded article, e.g. for bearing cages}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulds for making articles with holes in general | B29C 33/0033 |

B29C 45/263
{with mould wall parts provided with fine grooves or impressions, e.g. for record discs}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Producing phonographic records | B29D 17/002 |
| Preparing and using a stamper for the manufacture of records or carriers | G11B 7/263 |
| Record carriers characterised by their resin composition | G11B 23/0092 |
B29C 45/2632
{Stampers; Mountings thereof}

Definition statement
This place covers:
the mounting of stamper layers

B29C 45/2642
{Heating or cooling means therefor}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Heating or cooling the injection mould in general | B29C 45/73 |

B29C 45/2673
{with exchangeable mould parts, e.g. cassette moulds (B29C 45/1756 takes precedence)}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulds with exchangeable mould parts in general: | B29C 33/306 |
| Adjustable moulds in general: | B29C 33/308 |
| Adjustable moulds for injection moulding: | B29C 45/376 |

B29C 45/27
Sprue channels {Runner channels or runner nozzles}

Definition statement
This place covers:
Sprue bushings, runner nozzles, runner channels

References
Limiting references
This place does not cover:

| Runner nozzles for multi-component injection moulding | B29C 45/1603 |
Informative references

Attention is drawn to the following places, which may be of interest for search:

| Machine nozzles (i.e. the nozzles injecting the material into the mould) | B29C 45/20 |

B29C 45/2701

{Details not specific to hot or cold runner channels (B29C 45/2725 takes precedence)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Material feeding channels in general | B29C 33/0061 |

B29C 45/2703

{Means for controlling the runner flow, e.g. runner switches, adjustable runners or gates}

Definition statement

This place covers:

- e.g. rotatable sprue bushings

B29C 45/2708

{Gates (B29C 45/2703 takes precedence)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Mould filling gates in general | B29C 33/0077 |

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

| gate | the mould part that connects the runner with the cavity or cavity entrance. |

B29C 45/2735

{for non-coaxial gates, e.g. for edge gates}

Definition statement

This place covers:

- Side gates
B29C 45/2806
{consisting of needle valve systems (B29C 45/2896 takes precedence)}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Needle valves in spray nozzles in general | B05B 1/3046 |

B29C 45/32
having several axially spaced mould cavities {i.e. for making several separated articles}

Definition statement
This place covers:
Stack moulds

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Stack moulds in general | B29C 33/0088 |
| Presses having several platens arranged one above the other | B30B 7/02 |

B29C 45/34
having venting means

Definition statement
This place covers:
E.g. moulding in a vacuum environment

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulds with incorporated venting means in general | B29C 33/10 |
| Moulding using vacuum in general | B29C 2791/006 |
| Venting means for metal casting moulds | B22D 17/145 |
B29C 45/37
Mould cavity walls {, i.e. the inner surface forming the mould cavity, e.g. linings}

Definition statement
This place covers:
Mould cavity wall materials

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Mould coatings in general | B29C 33/56 |

B29C 45/372
{provided with means for marking or patterning, e.g. numbering articles}

Definition statement
This place covers:
Moulds walls provided with a surface roughness

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulds provided with means for marking or patterning in general | B29C 33/424 |

B29C 45/374
{for displaying altering indicia, e.g. data, numbers}

Definition statement
This place covers:
Mould cavity wall indicator means which are able to be adjusted in the mould.

References
Limiting references
This place does not cover:

| Indicators by exchanging parts of the cavity wall | B29C 45/2673, B29C 45/372 |
**B29C 45/376**

{adjustable (B29C 45/374 takes precedence)}

**Definition statement**

*This place covers:*

Changing of the cavity configuration, e.g. by mould parts that are movable

**B29C 45/38**

**Cutting-off equipment for sprues or ingates**

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Cutting-off sprues in pressure die casting | B22D 17/2076 |
| Cutting-off surplus material in metal casting | B22D 31/00 |

**B29C 45/40**

**Removing or ejecting moulded articles**

**Definition statement**

*This place covers:*

The process of the ejection

EP92916
Mechanical details of the ejector (covered by B29C 45/4005 and B29C 45/401)

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Moulds with means for removing or ejecting articles in general</th>
<th>B29C 33/44</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharging articles from the mould in general</td>
<td>B29C 37/0003</td>
</tr>
<tr>
<td>Ejecting castings in pressure die casting</td>
<td>B22D 17/2236</td>
</tr>
</tbody>
</table>

B29C 45/4005

{Ejector constructions; Ejector operating mechanisms (B29C 45/44 takes precedence)}

Definition statement

This place covers:

EP503068 fig 1, construction of the drive of the ejection unit.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Mechanical ejectors of moulds in general</th>
<th>B29C 33/442</th>
</tr>
</thead>
</table>
B29C 45/401
{Ejector pin constructions or mountings}

Definition statement

This place covers:

WO9819845, fig 3 and 4, sealing means 13 and construction 15 are special features of the pin.
B29C 45/42

using means movable from outside the mould between mould parts {, e.g. robots}

Definition statement

This place covers:
Robots for removing moulded articles

EP218101

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Discharging moulded articles by robots in general | B29C 37/0007 |
| Manipulators for evacuating cast pieces in pressure die casting | B22D 17/2084 |
| Robots in general | B25J |
**B29C 45/4208**

{and driven by the movable mould part}

**Definition statement**

*This place covers:*

EP837666, the moving mould causes the rack to rotate the pignon to move the robot

---

**B29C 45/4225**

{Take-off members or carriers for the moulded articles, e.g. grippers}

**Definition statement**

*This place covers:*

The part of the robot that picks up the moulded article
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gripping heads of manipulators in general</td>
<td>B25J 15/00</td>
</tr>
<tr>
<td>Gripping devices for feeding or discharging articles from a conveyor</td>
<td>B65G 47/90</td>
</tr>
</tbody>
</table>
**B29C 45/43**

using fluid under pressure

**Definition statement**

*This place covers:*

US4438065, fig 5 & 6, air through channel 70 & 75

US3892512, fig 4 & 5

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Using fluid pressure to remove articles from the mould in general | B29C 33/46 |
B29C 45/435
{introduced between a mould core and a hollow resilient undercut article, e.g. bellows}

Definition statement

This place covers:
EP818297, fig 5
EP100422 fig 1 & 2

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Bellows obtained by moulding

B29L 2031/703
**B29C 45/44**

for undercut articles

**Definition statement**

*This place covers:*

EP595491

---

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>undercut</td>
<td>an opening in a moulded article made by a supplementary mould part which can not move in an axial direction upon mould opening.</td>
</tr>
</tbody>
</table>

**B29C 45/4407**

{by flexible movement of undercut portions of the articles}

**Definition statement**

*This place covers:*

the flexible movement is the UNDERCUT PORTION of the ARTICLE
EP635351, fig 8,9,10 part 24 can move flexible

EP510650, fig 1, undercut 44,64. fig 2b & 4b core moves and undercut can flex away
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Discharging moulded articles from the mould by deforming undercut portions of the article in general | B29C 37/0014 |

B29C 45/4421

{using expansible or collapsible cores}

Definition statement

This place covers:

moulds comprise usually two types of cores.

US5403179, items 108 and 138 are collapsible, because of the insertable and removable pin.

The movement of the cores is linked to each other.

![Diagram of moulding process](image_url)
**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Collapsible cores or mandrels for removing or ejecting moulded articles in general | B29C 33/485 |
| Collapsible cores for winding and joining | B29C 53/824 |

**B29C 45/4435**

{using inclined, tiltable or flexible undercut forming elements driven by the ejector means}

**Definition statement**

*This place covers:*

Only undercut forming element being driven by the ejector means.

Three types of undercut forming elements are present:

Flexible:
EP1201396, fig 4, undercut forming element 3, flexing at 2, driven by 9/10

Inclined:

US5551864, inclined element 26 driven by 24

Tiltable (or pivotable),
US5773048, Undercut forming element 94, driven by ejector 46. See hinge 90-92 (fig 1 & 2)
Inclined, tiltable or flexible undercut forming elements driven by other means than the ejector

**B29C 45/4457**

\{using fusible, soluble or destructible cores\}

**Definition statement**

*This place covers:*

Soluble cores, e.g. salt, ice, wax, plastic, metal
EP173447, claim 1, core 17 (fig 1-5)

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Destructible cores to facilitate the removal or ejection of moulded articles in general | B29C 33/448 |
| Soluble cores to facilitate the removal or ejection of moulded articles in general | B29C 33/52 |
**B29C 45/4471**

{using flexible or pivotable undercut forming elements (*B29C 45/4435* takes precedence)}

**Definition statement**

*This place covers:*

EP1223021, fig 2 & 3. The pincers of the head open automatically.

EP738578, fig 5-7, pivotable part 9
References

Limiting references

This place does not cover:

Pivotable undercut forming elements driven by the ejector  
B29C 45/4435

Informative references

Attention is drawn to the following places, which may be of interest for search:

Elastic or flexible cores or mandrels to facilitate the removal of the moulded article  
B29C 33/50
B29C 45/4478
{using non-rigid undercut forming elements, e.g. elastic or resilient}

Definition statement

This place covers:
DE2609198, fig 4-6, non-rigid element 24,
DE2239508, element 20 can act in a flexible way after rod 24 is removed.

GB2323321, inflatable means 28,

---

Fig. 1
FR1559371, element 9

**Fig. 1**

US5080576, element 16

**FIG. 1**

**FIG. 2**

**FIG. 3**

**FIG. 4**
B29C 45/462

{Injection of preformed charges of material}

Definition statement
This place covers:
Injection of lumps, billets, tablets, preforms

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Feeding of measured doses</th>
<th>B29C 45/1808</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blocks, tablets as preform for moulding</td>
<td>B29K 2105/255</td>
</tr>
</tbody>
</table>

B29C 45/464

{using a rotating plasticising or injection disc}

Definition statement
This place covers:
Grooved conical discs for plasticising or injection

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Using rollers or discs in extrusion moulding | B29C 45/48 |

B29C 45/5008

{Drive means therefor}

Definition statement
This place covers:
Drives for axially movable screws by rotation and translation or translation only

References
Limiting references
This place does not cover:

| Drives for axially movable screws by rotation only | B29C 45/47 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Hydraulic circuits in injection moulding machines as such | B29C 45/82 |
B29C 45/5605
{Rotatable mould parts}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulding articles between moving mould surfaces | B29C 67/0003 |

B29C 45/568
{Applying vibrations to the mould parts}

Definition statement
This place covers:
applying vibrations to runners, gates, etc. during moulding.

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Using vibrations during moulding in general | B29C 2791/008 |

B29C 45/57
Exerting after-pressure on the moulding material {B29C 45/174 takes precedence)}

Definition statement
This place covers:
the application of dwell pressure

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Compensating volume or shape change during moulding in general | B29C 37/005 |
| Applying pressure to compensate volume change during casting | B29C 39/405 |

B29C 45/572
{using movable mould wall or runner parts}

Definition statement
This place covers:
the application of dwell pressure by means incorporated in the mould, e.g. locally pressurizing pins
Relationships with other classification places

The difference between injection compression moulding (B29C 45/561) and B29C 45/572 is typically that in injection compression moulding a movable mould half is used for shaping the material in the cavity, while in B29C 45/572 the already shaped material is pressed for compensating the volume change caused by the shrinkage. Pressurizing is typically done locally e.g. by pressurizing pins.

It is further noted, that B29C 45/56 comprises a reference out, that B29C 45/572 takes precedence.
B29C 45/58
Details

Definition statement
This place covers:
Details of the injection unit

B29C 45/581
{Devices for influencing the material flow, e.g. "torpedo constructions" or mixing devices}

References

Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Details of the screw</th>
<th>B29C 45/60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating or cooling of the injection unit</td>
<td>B29C 45/72</td>
</tr>
</tbody>
</table>

Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Mixing devices in extrusion moulding</th>
<th>B29C 48/36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extruder like static flow mixers in general</td>
<td>B01F 5/0656</td>
</tr>
</tbody>
</table>

B29C 45/585
{Vibration means for the injection unit or parts thereof}

Definition statement
This place covers:
Vibrating screws or plungers

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Applying vibration to mould parts</th>
<th>B29C 45/568</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applying vibrations during extrusion moulding</td>
<td>B29C 48/14</td>
</tr>
<tr>
<td>Applying vibrations during moulding in general</td>
<td>B29C 2791/008</td>
</tr>
<tr>
<td>Applying vibrations during extrusion moulding of ceramics</td>
<td>B28B 3/205</td>
</tr>
</tbody>
</table>
B29C 45/586
{Injection or transfer plungers}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Injection pistons for pressure die casting | B22D 17/203 |

B29C 45/60
Screws

Definition statement
This place covers:
mixing parts connected to the screw

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Screws in extrusion moulding: | B29C 48/505 |

B29C 45/62
Barrels or cylinders

Definition statement
This place covers:
Also transfer pots

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Details of extruder barrels or cylinders | B29C 48/68 |
| Construction of extruder barrels | B29C 48/6801 |

B29C 45/63
Venting or degassing means

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Venting or degassing means in extrusion moulding | B29C 48/76 |
**B29C 45/64**

**Mould opening, closing or clamping devices {(combined with means for plasticising or homogenising B29C 45/70)}**

**Definition statement**

*This place covers:*

Mechanical, hydraulic and hydro-mechanical opening, closing & clamping means. For these aspects subgroups are present.

The remaining scope of **B29C 45/64** is small, e.g. magnetic, piezo-electric, magnetostrictive means, using shape memory alloy.

DE10053424: linear motors L1 & L2

DE4336572, magnetostrictive elements (13)
DE3715161, electromagnet 12

Fig. 2

EP272138, claim 1, elongation of the tie-bar by energy storage.

FIG. 4
B29C 45/641

{Clamping devices using means for straddling or interconnecting the mould halves, e.g. jaws, straps, latches}

Definition statement

This place covers:

Clamping devices applicable to moulds which are ALREADY CLOSED.
EP1214999, fig 1, straddling means 9

EP420098, straddling means 7b
EP0209413, locking means 11 after closing

WO0121378, stradling means 13
WO9942275, mould halves 26/62 clamped by 10 (fig 2)

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Clamping means operating on closed or nearly closed mould parts, the clamping means being independently movable of the opening or closing means in general | B29C 33/202 |

B29C 45/66

mechanical

Definition statement

This place covers:

Mechanical means for opening closing and clamping. A motor for driving the mechanical means can only be electric or servo but not hydraulic.
EP645228 fig 1 (note: this is not a toggle, then it should have been driven at point 18, it is driven at 16)

FIG. 1

EP627577 lever
EP427438 fig 2, pignon/rack 11/12

EP386233 crank mechanism fig 1a,b,c
EP381770 40,50 ball nut & screw mechanism.

Examples for cranks and eccentrics as mechanical opening, closing and clamping means are taken from the field of presses (B30B) for reference purpose.

Cranks:

US5544577, driven crank axis is 14, 6 is like the mould
DE403768 Driven axis is a which drives b

Eccentrics:

DE19810425 continuous axis 4 is driven, around the excenter or cam is the bush which is rotated in an excentric way to drive part 12 for ‘opening closing clamping mould 3’
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Presses driven by a lever mechanism</th>
<th>B30B 1/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presses driven by cranks, cams, or eccentrics</td>
<td>B30B 1/26</td>
</tr>
</tbody>
</table>

**B29C 45/661**

{using a toggle mechanism for mould clamping}

**Definition statement**

This place covers:

EP775567 screw nut drives the toggle, the toggle drives the moving mould, therefore toggle
EP427438 fig 5 rack & pinion drives the toggle

EP164419 fig 1, servomotor 1 driving nut 4 & screw drives the toggle

Reference is further made to several types of toggle mechanisms for mould clamping:
DE9403353U figures 1, 2 and 3,

Fig. 1

EP573917 fig 1,
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Presses driven by a toggle mechanism | B30B 1/10 |

B29C 45/67

hydraulic

Definition statement

This place covers:

EP665093, clamping cylinder 32, opening & closing cylinder 22
hydraulic includes also other fluids & gas (e.g. pneumatic)

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Hydraulic circuits in general                  | B29C 45/82 |

**B29C 45/6707**

{without relative movement between the piston and the cylinder of the clamping device during the mould opening or closing movement}

**Definition statement**

This place covers:

JP10296809, during opening and closing operation by cylinder 20, the clamping force cylinder 22 is inactive and moves together with the movable platen 18. Only after closing the mould and clamping on
the tie rods (locking nut & cylinder 26,28), there is a relative movement between the piston 24 and the cylinder 22 of the clamping device.

EP689924, opening & closing by cylinder 8, locking means 9 after locking clamping by cylinder 6.
EP319487 10 = closing means, clamping on tie rod by 12, pulling & clamping by 36

WO99/00239, closing by cylinder 5, blocking on tie rod by 19, tie rod clamped by cylinder 13
US3862596, exceptional no clamping on the tie rods, similar no movement for the clamping cylinder

US3833333 movable cylinder, clamping cylinder 45/47/48, opening & closing 20/21
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Presses using low fluid pressure long stroke plunger for opening and closing and high pressure short stroke cylinder means

B29C 45/6707

B29C 45/6714

{using a separate element transmitting the mould clamping force from the clamping cylinder to the mould}

Definition statement

This place covers:

Separate element is MCFTM (mould clamping force transmitting means)

EP551099 fig 1, element 28 = MCFTM & moves with the movable mould.
Once the mould is closed (fig 2), block plate 66, required for being able to transmit the clamping force. Note that the clamping cylinder is not operative during opening & closing.


Fig 1 mould closed, blocked position
fig 3 & clamping force can be transmitted

EP480351 MCFTM = element 18

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Presses using low fluid pressure long stroke plunger for opening and closing and high pressure short stroke cylinder means  B30B 1/323
B29C 45/6721
{the separate element being displaceable with respect to the mould or the clamping cylinder}

Definition statement
This place covers:
MCFTM (mould clamping force transmission means, cf. B29C 45/6714) is ‘removable’.

GB1220970 MCFTM 15 is put in between only when the mould is closed, see fig 1, otherwise opening & closing cylinder 6,7 would not be able to open the mould.
GB1032477 element 8 = removable MCFTM (fig 1 & 2)

FR2084078 removable MCFTM = element 44
**B29C 45/6728**

{the separate element consisting of coupling rods}

**Definition statement**

*This place covers:*

tie rods mounted on and movable with the movable mould plate and coupled to the fixed mould plate during mould clamping. Bayonet couplings are typically applied.

The separate mould clamping force transmission means, (SMCFTM) is the coupling rod 164 in EP296410, coupling means 180.
WO8902357, SMCF/ = coupling members 12,13. clamping by 16.

GB2064415 clamping bush 31, piston 18.
B29C 45/6764

{using hydraulically connectable chambers of the clamping cylinder during the mould opening and closing movement}

Definition statement

This place covers:

JP7186220, hydraulic chambers A1 & A2 are able to communicate through passage 19 and valve 21 during the opening and closing movement of the clamping die. Note the difference in active piston surface area on the left side and right side of 11.

Clamping pressure is typically applied to only one of the chambers (A1), note the possibility of fluid leakage through 23 & 25.
EP281330, fig 1, cylinder 27 during closing volume hydraulic chamber decreases so hydraulic oil moves through 33 into W. Fig 2, valve 34 is closed and high pressure oil is fed from pump 14 to W.
**B29C 45/6771**

{the connection being provided within the clamping cylinder}

**Definition statement**

*This place covers:*

EP342235, see fig 1,2 the different diameter clamping piston & cylinder. After closing, no connection between chamber 1a & 1b. In fig 1, the oil still flows between the chambers.
In fig 2, clamping is possible (chamber 1b).

EP281329, opening 47 can be closed by valve 52.

Fig 4, open.
Figure 6, closed valve, now high pressure in room B, possible to clamp. The connection is done through the plunger.

**B29C 45/6778**

{Stroke adjusting or limiting means}

**Definition statement**

*This place covers:*

DE2203020 cf. element 3
**B29C 45/68**

**hydro-mechanical**

**Definition statement**

*This place covers:*

WO9211993, closing by screw/nut (fig 1), hydraulic chamber 19 for clamping.
**B29C 45/681**

{using a toggle mechanism as mould clamping device}

**Definition statement**

*This place covers:*

EP192484, piston 4 drives the toggle 5 for opening, closing and clamping.

![Diagram](image)

WO8900914, cf. fig 1

---

**FIG. 1**

![Diagram](image)

WO8900914, cf. fig 1
B29C 45/683

{using both a toggle mechanism as mould closing device and another mechanism as mould clamping device}

Definition statement

This place covers:

FR2317982, closing by toggle. The toggle is only used for closing, not for clamping. A separate cylinder (6,7,8) is provided for clamping.
FR2302187, Closing of toggle 5,6 by cylinder 1. Separate means (14) for clamping

**B29C 45/72**

**Heating or cooling**

**Definition statement**

*This place covers:*

Heating or cooling of the mould (covered by B29C 45/73), the moulded articles (covered by B29C 45/7207), the injection unit (covered by B29C 45/74) as well as the mould and the injection unit (covered by B29C 45/72).

**References**

**Limiting references**

*This place does not cover:*

| Heating or cooling means for moulds provided with fine grooves or impressions | B29C 45/263 |
| Heating or cooling means for runner channels | B29C 45/2737 |
| Heating of tablets | B29C 45/462 |

**B29C 45/7207**

{of the moulded articles}

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Cooling preforms during blow moulding: | B29C 49/6427 |
## Cooling in general:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>F25D 13/065</td>
<td>B29C 45/7207</td>
</tr>
</tbody>
</table>

### B29C 45/73

of the mould {\(\text{B29C 45/2642 and B29C 45/2737 take precedence}\)}

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 33/02</td>
<td>Moulds with incorporated heating or cooling means in general</td>
</tr>
<tr>
<td>B22D 17/2218</td>
<td>Cooling or heating equipment for pressure casting dies</td>
</tr>
<tr>
<td>B30B 15/064</td>
<td>Press plates with heating or cooling means</td>
</tr>
</tbody>
</table>

### B29C 45/7306

{Control circuits therefor}

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 35/007</td>
<td>Tempering units for temperature control of moulds or cores in general</td>
</tr>
</tbody>
</table>

### B29C 45/74

of the injection unit

**Definition statement**

This place covers:

heating of the injection unit, including everything which belongs to it, e.g. hopper, cylinder.

**References**

**Limiting references**

This place does not cover:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 45/72</td>
<td>Heating and cooling of the injection unit AND the mould</td>
</tr>
</tbody>
</table>

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 48/83</td>
<td>Heating or cooling of the extrusion cylinder</td>
</tr>
</tbody>
</table>
B29C 45/76
Measuring, controlling or regulating {measuring in general G01; controlling or regulating in general G05}

References
Limiting references
This place does not cover:

Control and regulation of mould thickness adjustments B29C 45/1751

Special rules of classification
Document classified in B29C 45/76 and subgroups are indexed by allocating B29C 2945/00 Indexing Codes to identify all aspect related to what, how, when, where the measurement is done and what, how, where and when the regulation is done.

B29C 45/7626
{the ejection or removal of moulded articles}

Definition statement
This place covers:
e.g. using a camera or laser to inspect if an article has been correctly ejected, the process of ejection.

Special rules of classification
Since B29C 45/7626 takes precedence over B29C 45/84, inspection systems for controlling the ejection, including an alarm system as a safety device, are only classified in B29C 45/7626.

B29C 45/7686
{the ejected articles, e.g. weight control}

Relationships with other classification places
Measuring and controlling of the articles once they are ejected.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

Control of the ejection process of moulded articles B29C 45/7626

B29C 45/82
Hydraulic {or pneumatic} circuits

References
Limiting references
This place does not cover:

Hydraulic or pneumatic circuits for mould clamping B29C 45/67
B29C 45/83
Lubricating means

References

Limiting references
This place does not cover:

| Release agents, lubricating means for mould cavity walls | B29C 33/60 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Cleaning or lubricating moulds in pressure die casting | B22D 17/2007 |
| Lubricating means for presses | B30B 15/0088, B30B 15/0011 |

B29C 45/84
Safety devices {B29C 45/7626 takes precedence}

References

Limiting references
This place does not cover:

| Safety devices for the ejection process | B29C 45/7626 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Safety devices for pressure die casting | B22D 17/2092 |

B29C 45/842
{Detection of insert defects, e.g. inaccurate position, breakage}

Definition statement
This place covers:

- e.g. detection of broken glass to be overmoulded, misfeeding the inserts
B29C 48/00

Extrusion moulding, i.e. expressing the moulding material through a die or nozzle which imparts the desired form; Apparatus therefor (extrusion blow-moulding B29C 49/04)

Definition statement

This place covers:

Processes whereby material of substances in a plastic state (e.g. polymers) are being pressed through a nozzle, thereby obtaining a cross sectional shape. This shape could be any hollow or solid shape.

Combinations of extrusion and other shaping techniques.

References

Limiting references

This place does not cover:

| Extrusion blow-moulding | B29C 49/04 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Combined blow-moulding and manufacture of the preform or the parison, whereby the parison is being partly injected and partly extruded</th>
<th>B29C 49/022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus for additive manufacturing</td>
<td>B29C 64/20</td>
</tr>
<tr>
<td>Mixing dough</td>
<td>A21C 1/00</td>
</tr>
<tr>
<td>Mixing chocolate</td>
<td>A23G</td>
</tr>
<tr>
<td>Mixing in general, phases</td>
<td>B01F 3/00</td>
</tr>
<tr>
<td>Mixing in general, mixer types</td>
<td>B01F 5/00</td>
</tr>
<tr>
<td>Mixing in general, mixers with rotary stirring devices</td>
<td>B01F 7/00</td>
</tr>
<tr>
<td>Hand held extruders</td>
<td>B05C 17/00</td>
</tr>
<tr>
<td>Extruding metal</td>
<td>B21C 23/00</td>
</tr>
<tr>
<td>presses for clay or mixtures containing cement wherein material is extruded</td>
<td>B28B 3/20</td>
</tr>
<tr>
<td>Extruding clay</td>
<td>B28B 3/22</td>
</tr>
<tr>
<td>Mixing, kneading of the material to be shaped</td>
<td>B29B 7/00</td>
</tr>
<tr>
<td>Mixing or kneading with more than one shaft</td>
<td>B29B 7/46</td>
</tr>
<tr>
<td>Making preforms by extrusion moulding</td>
<td>B29B 11/10</td>
</tr>
<tr>
<td>Presses using a press ram</td>
<td>B30B 1/00</td>
</tr>
<tr>
<td>Extrusion presses</td>
<td>B30B 11/22</td>
</tr>
<tr>
<td>Machinery for making envelopes or bags etc</td>
<td>B31B</td>
</tr>
<tr>
<td>Folding and filling bags</td>
<td>B65B 9/08</td>
</tr>
<tr>
<td>Extruding microstructures</td>
<td>B81B, B81C</td>
</tr>
<tr>
<td>Reaction extrusion</td>
<td>C08</td>
</tr>
<tr>
<td>Formation of filaments, threads, or the like, e.g. by melt spinning</td>
<td>D01D 5/00</td>
</tr>
</tbody>
</table>
Special rules of classification

All material aspects, not only the moulding material as such, but also fillers, preformed parts of mould (die) composition has to be identified by allocating the appropriate Indexing Code of B29K. This also applies to moulding material properties, e.g. tear strength for identifying that extruded layers are easily torn apart is classified in B29K 2995/0081.

Extrusion techniques characterised by the material must be allocated a classification in B29C 48/0022.

All SHAPING CONDITIONS influencing the extrusion technique, e.g. extrusion in sterile or vacuum environments, the application of vibrations, must be identified by allocating the appropriate Indexing Code as provided in B29C 2791/004 and subgroups, as well the classification in B29C 48/14 or subgroups.

Cutting operations and printing operations must be identified by allocating the appropriate Indexing Code as provided in B29C 2793/00 and B29C 2795/00.

All ARTICLES must be identified by allocating the appropriate Indexing Codes as provided for by the subclass B29L, e.g. anchoring between layers in general, e.g. due to chemical treatment B29C 2045/1664, mechanical anchoring in general, e.g. layers gripping into each other B29C 37/0082.

COMBINATIONS of extrusion and other techniques corresponding to the subgroups of B29C 48/001 are classified in B29C 48/001 or one of its subgroups.

Orienting or stretching of extruded materials should be identified by allocation the Indexing Code B29K 2995/005 and B29K 2995/0046 or one of its subgroups.

The Indexing Codes B29C 2791/00 - B29C 2791/003 are generally not used in this group B29C 48/00.

All MEASURING and CONTROL aspects must receive the relevant code(s) in the B29C 2948/92 indexing scheme.

B29C 48/0011

{combined with compression moulding}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Indexing Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression moulding, i.e. applying external pressure to flow the moulding material, e.g. foaming</td>
<td>B29C 43/00</td>
</tr>
<tr>
<td>Coagulating materials by using a bath</td>
<td>B29C 48/919</td>
</tr>
<tr>
<td>Polymer / Wood fiber composites</td>
<td>B27N 3/28</td>
</tr>
<tr>
<td>Moulding materials</td>
<td>B29K 2001/00 - B29K 2103/00</td>
</tr>
<tr>
<td>Condition form or state of the material to be shaped or moulded material</td>
<td>B29K 2105/00</td>
</tr>
<tr>
<td>Use of materials as reinforcements</td>
<td>B29K 2201/00 - B29K 2313/00</td>
</tr>
<tr>
<td>Use of materials as preformed parts, e.g. inserts</td>
<td>B29K 2601/00 - B29K 2713/00</td>
</tr>
<tr>
<td>Use of materials as mould material</td>
<td>B29K 2801/00 - B29K 2913/00</td>
</tr>
<tr>
<td>Properties of the moulding materials</td>
<td>B29K 2995/00</td>
</tr>
</tbody>
</table>
B29C 48/0014

{producing flat articles having components brought in contact outside the extrusion die}

Definition statement

This place covers:

---

B29C 48/0015

{producing hollow articles having components brought in contact outside the extrusion die}

Definition statement

This place covers:
B29C 48/0016
{using a plurality of extrusion dies}

Definition statement
This place covers:

B29C 48/0017
{combined with blow-moulding or thermoforming}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Blow moulding combined with the manufacture of the preform</th>
<th>B29C 49/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermoforming combined with the manufacture of the preform</td>
<td>B29C 51/02</td>
</tr>
</tbody>
</table>

B29C 48/0018
{combined with shaping by orienting, stretching or shrinking, e.g. film blowing (B29C 48/0017 takes precedence)}

References
Limiting references
This place does not cover:

| Extrusion moulding combined with blow-moulding or thermoforming | B29C 48/0017 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Oriented material | B29K 2995/005 |

Special rules of classification
The Indexing Codes as provided in B29K 2995/005 and B29K 2995/0046 and subgroups should preferably be allocated to identify aspects relating to orienting or stretching.
**B29C 48/0019**

(combined with shaping by flattening, folding or bending)

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by bending, folding, twisting, straightening or flattening of blown tubular films</td>
<td>B29C 53/10</td>
</tr>
<tr>
<td>Folding sheets for making bags</td>
<td>B31B 50/26</td>
</tr>
<tr>
<td>Folding and filling bags</td>
<td>B65B 9/08</td>
</tr>
</tbody>
</table>

**B29C 48/002**

(combined with surface shaping)

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface shaping {of articles}, e.g. embossing; Apparatus therefor</td>
<td>B29C 59/00</td>
</tr>
</tbody>
</table>

**B29C 48/0021**

(combined with joining, lining or laminating)

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lining or sheathing, i.e. applying preformed layers or sheathings of plastics; Apparatus therefor</td>
<td>B29C 63/00</td>
</tr>
<tr>
<td>Joining {or sealing} of preformed parts {, e.g. welding of plastics materials}; Apparatus therefor</td>
<td>B29C 65/00</td>
</tr>
<tr>
<td>Methods or apparatus for laminating, e.g. by curing or by ultrasonic bonding</td>
<td>B32B 37/00</td>
</tr>
</tbody>
</table>

**B29C 48/0022**

(combined with cutting)

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting</td>
<td>B29C 2793/00</td>
</tr>
<tr>
<td>Cutting off</td>
<td>B29C 2793/0027</td>
</tr>
</tbody>
</table>
Special rules of classification
The Indexing Codes as provided in B29C 2793/00 and subgroups should preferably be allocated to identify aspects relating to the process of cutting

B29C 48/0023
{combined with printing or marking}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Printing | B29C 2795/00 |

Special rules of classification
The Indexing Codes as provided in B29C 2795/00 and subgroups should preferably be allocated to identify aspects relating to the process of printing.

B29C 48/02
Small extruding apparatus, e.g. handheld, toy or laboratory extruders

Definition statement
This place covers:
Extruders used for material testing or making test specimens for testing material properties.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Design of extruder parts, e.g. by modelling based on mathematical theories or experiments | B29C 48/251 |

B29C 48/022
{characterised by the choice of material}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<p>| Coagulating materials by using a bath | B29C 48/919 |
| Polymer / Wood fiber composites | B27N 3/28 |
| Moulding materials | B29K 2001/00 - B29K 2103/00 |
| Condition form or state of the material to be shaped or moulded material | B29K 2105/00 |</p>
<table>
<thead>
<tr>
<th>Use of materials as reinforcements</th>
<th>B29K 2201/00 - B29K 2313/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of materials as preformed parts, e.g. inserts</td>
<td>B29K 2601/00 - B29K 2713/00</td>
</tr>
<tr>
<td>Use of materials as mould material</td>
<td>B29K 2801/00 - B29K 2913/00</td>
</tr>
<tr>
<td>Properties of the moulding materials</td>
<td>B29K 2995/00</td>
</tr>
<tr>
<td>Compositions of Macromolecular compounds in general</td>
<td>C08L 1/00 - C08L 101/10</td>
</tr>
</tbody>
</table>

**B29C 48/023**  
(Extruding materials comprising incompatible ingredients)

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

- Feeding at several locations: B29C 48/297
- Degradable materials: B29K 2995/0059

**B29C 48/025**  
General arrangement or layout of plant

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

- Using more than one extruder to feed one die, e.g. adapter blocks: B29C 48/49

**B29C 48/0255**  
(for extruding parallel streams of material, e.g. several separate parallel streams of extruded material forming separate articles (B29C 48/0013, B29C 48/345 takes precedence))

**References**

*Limiting references*

This place does not cover:

- Extrusion moulding in several steps: B29C 48/0013
- Extrusion nozzles comprising two or more adjacently arranged ports: B29C 48/345

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

- Using more than one extruder to feed one die, e.g. adapter blocks: B29C 48/49
**B29C 48/03**
characterised by the shape of the extruded material at extrusion

References

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Extrusion dies or nozzles</th>
<th>B29C 48/30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufactured articles</td>
<td>B29L</td>
</tr>
</tbody>
</table>

**B29C 48/04**
Particle-shaped (making granules B29B 9/00)

Definition statement

This place covers:

The extrusion moulding articles characterised by their shape, the shape being particle, powder, or granule.

![Particles, powder, granules](image)

References

*Limiting references*

This place does not cover:

<table>
<thead>
<tr>
<th>Making granules</th>
<th>B29B 9/00</th>
</tr>
</thead>
</table>

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Particles, powder, granules</th>
<th>B29K 2105/251</th>
</tr>
</thead>
</table>

**B29C 48/05**
Filamentary, e.g. strands

Definition statement

This place covers:

The extrusion moulding articles characterised by their shape, the shape being filamentary (e.g. threads, fibres).
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple annular extrusion nozzles in coaxial arrangement, e.g. for making</td>
<td>B29C 48/335</td>
</tr>
<tr>
<td>multi-layered tubular articles</td>
<td></td>
</tr>
<tr>
<td>Producing filamentary materials</td>
<td>B29D 99/0078</td>
</tr>
<tr>
<td>Filamentary material</td>
<td>B29L 2031/731</td>
</tr>
</tbody>
</table>

B29C 48/06

Rod-shaped

Definition statement

This place covers:

The extrusion moulding articles characterised by their shape, the shape being non-tubular rigid (e.g. rod).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producing rods</td>
<td>B29D 99/0046</td>
</tr>
<tr>
<td>Rods</td>
<td>B29L 2031/06</td>
</tr>
</tbody>
</table>

B29C 48/07

Flat, e.g. panels

Definition statement

This place covers:

The extrusion moulding articles characterised by their shape, the shape being flat rigid (e.g. panel or plate).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat articles</td>
<td>B29L 2007/00</td>
</tr>
<tr>
<td>Belts or bands</td>
<td>B29L 2029/00</td>
</tr>
</tbody>
</table>
**B29C 48/08**

**Flexible, e.g. films**

**Definition statement**

*This place covers:*

The extrusion moulding articles characterised by their shape, the shape being flat flexible (e.g. sheet, foil, or film).

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Flat articles</th>
<th>B29L 2007/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Films webs</td>
<td>B29L 2007/008</td>
</tr>
<tr>
<td>Belts or bands</td>
<td>B29L 2029/00</td>
</tr>
</tbody>
</table>

**B29C 48/09**

**Articles with cross-sections having partially or fully enclosed cavities, e.g. pipes or channels**

**Definition statement**

*This place covers:*

The extrusion moulding articles characterised by their shape, the shape being tubular rigid (e.g. one hole).

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Hollow articles</th>
<th>B29L 2022/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubular articles</td>
<td>B29L 2023/00</td>
</tr>
<tr>
<td>Tubes or pipes, i.e. rigid</td>
<td>B29L 2023/22</td>
</tr>
<tr>
<td>Articles with hollow walls</td>
<td>B29L 2024/00</td>
</tr>
</tbody>
</table>
**B29C 48/10**

**flexible, e.g. blown foils**

**Definition statement**

This place covers:
The extrusion moulding articles characterised by their shape, the shape being tubular flexible (e.g. foil or film).

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Tubular articles</th>
<th>B29L 2023/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubular films, sleeves</td>
<td>B29L 2023/001</td>
</tr>
</tbody>
</table>

**B29C 48/11**

**comprising two or more partially or fully enclosed cavities, e.g. honeycomb-shaped**

**Definition statement**

This place covers:
The extrusion moulding articles characterised by their shape, the shape being multi hole (e.g. honeycomb).

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Extruding ceramic honeycomb structures</th>
<th>B28B 2003/203</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producing honeycomb structures</td>
<td>B29D 99/0089</td>
</tr>
<tr>
<td>Multi-tubular articles</td>
<td>B29L 2031/60</td>
</tr>
<tr>
<td>Honeycomb</td>
<td>B29L 2031/608</td>
</tr>
</tbody>
</table>
B29C 48/12
Articles with an irregular circumference when viewed in cross-section, e.g. window profiles

Definition statement
This place covers:
The extrusion moulding articles characterised by their shape, the shape being irregular (e.g. non-flat or non-cylindrical).

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Articles having a profiled cross section                               | B29L 2031/003 |

B29C 48/13
Articles with a cross-section varying in the longitudinal direction, e.g. corrugated pipes

Definition statement
This place covers:
The extrusion moulding articles characterised by their shape, the shape being longitudinally irregular.

B29C 48/131
{Curved articles}

Definition statement
This place covers:
The extrusion moulding articles characterised by their shape, the shape being curved.
**B29C 48/14**

characterised by the particular extruding conditions, e.g. in a modified atmosphere or by using vibration

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Shaping conditions, e.g. vacuum | B29C 2791/004 |

**B29C 48/142**

{using force fields, e.g. gravity or electrical fields (B29C 48/9165 takes precedence)}

**Definition statement**

This place covers:

Vertical extrusion

**References**

*Limiting references*

This place does not cover:

| Electrostatic pinning | B29C 48/9165 |

**B29C 48/15**

incorporating preformed parts or layers, e.g. extrusion moulding around inserts

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Relative movement between apparatus parts, e.g. moving die along preformed part to be coated</th>
<th>B29C 48/266</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal treatment of preformed parts</td>
<td>B29C 48/79</td>
</tr>
<tr>
<td>Applying material to surfaces</td>
<td>B05C 5/02</td>
</tr>
<tr>
<td>Applying material to a part of an article</td>
<td>B05C 5/0216</td>
</tr>
</tbody>
</table>
B29C 48/16
Articles comprising two or more components, e.g. co-extruded layers

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Feedblocks or adapter blocks                  | B29C 48/495 |

B29C 48/17
the components having different colours

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Applying surface layers, e.g. coatings, decorative layers | B29C 37/0025 |
| Applying coating, colouring                              | B29D 11/00865, B29D 11/00894 |
| Pigments, colouring agents                               | B29K 2105/0032 |
| Materials having optical properties                      | B29K 2995/0018 |
| Coloured articles                                        | B29K 2995/002 |
| Multi-coloured articles                                  | B29K 2995/0021 |

B29C 48/175
{comprising a multi-coloured single component, e.g. striated, marbled or wood-like patterned}

Definition statement
This place covers:

B29C 48/18
the components being layers

Definition statement
This place covers:
Co-extrusion of several components, e.g. layers
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Incorporating preformed components</th>
<th>B29C 48/15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dies for co-extrusion of multi-component articles</td>
<td>B29C 48/304, B29C 48/335</td>
</tr>
<tr>
<td>Flow dividers for layer multiplication</td>
<td>B29C 48/71</td>
</tr>
<tr>
<td>Plastic layered products</td>
<td>B29L 2009/00</td>
</tr>
<tr>
<td>Layered products</td>
<td>B32B 1/00 - B32B 33/00</td>
</tr>
<tr>
<td>Methods or apparatus for laminating</td>
<td>B32B 37/00</td>
</tr>
</tbody>
</table>

B29C 48/185

{comprising six or more components, i.e. each component being counted once for each time it is present, e.g. in a layer}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Layer multiplication | B29C 48/71 |

B29C 48/19

the layers being joined at their edges

Definition statement

This place covers:

B29C 48/20

one of the layers being a strip, e.g. a partially embedded strip

Definition statement

This place covers:
B29C 48/21

the layers being joined at their surfaces

Definition statement
This place covers:

B29C 48/22

with means connecting the layers, e.g. tie layers or undercuts

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Mechanical anchoring in general, e.g. layers gripping to each other | B29C 37/0082 |
| Anchoring between layers in general, e.g. due to chemical treatment | B29C 2045/1664 |
| Tear strength in general, e.g. layers easily torn apart | B29K 2995/0081 |

B29C 48/23

with means for avoiding adhesion of the layers, e.g. for forming peelable layers

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Decreased tear strength | B29K 2995/0081 |

B29C 48/251

{Design of extruder parts, e.g. by modelling based on mathematical theories or experiments}

Definition statement
This place covers:
Extruder calculations, e.g. analytical or numerical, theory or experiments.
B29C 48/2519
{by modelling of mechanical strength}

Definition statement
This place covers:
For example, analytical or numerical

B29C 48/252
{Drive or actuation means; Transmission means; Screw supporting means}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Drive means for presses</th>
<th>B30B 11/241</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gearings</td>
<td>F16H 1/22</td>
</tr>
</tbody>
</table>

B29C 48/2528
{Drive or actuation means for non-plasticising purposes, e.g. dosing unit}

Definition statement
This place covers:
For example, drives for conveyor unit or cutting unit

B29C 48/255
Flow control means, e.g. valves (flow dividers B29C 48/695)

Definition statement
This place covers:
Valves or adjustable parts, e.g. for changing flow direction, to change or modify the flow pattern or to throttle the flow.

References
Limiting references
This place does not cover:

| Flow dividers | B29C 48/695 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Explicit throttling in general | B29C 48/268 |
B29C 48/256

{Exchangeable extruder parts (B29C 48/691 takes precedence)}

References

Limiting references

This place does not cover:

| Arrangements for replacing filters | B29C 48/691 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Injection moulding exchanging the injection unit or parts thereof | B29C 45/176 |

B29C 48/2564

{Screw parts}

Definition statement

This place covers:
For example, modular screw parts

B29C 48/2565

{Barrel parts}

Definition statement

This place covers:
For example, modular barrel parts

B29C 48/2566

{Die parts}

Definition statement

This place covers:
For example, modular die parts

B29C 48/2567

{Hopper or feeder parts}

Definition statement

This place covers:
For example, modular hopper of feeder parts
**B29C 48/2568**

*{Inserts}*  

**Definition statement**  

*This place covers:*  

Small parts, e.g. for changed flow pattern, changed extrudate shape, to throttle flow or replaceable parts due to wear

**B29C 48/266**  

*{Means for allowing relative movements between the apparatus parts, e.g. for twisting the extruded article or for moving the die along a surface to be coated}*

**References**  

*Informative references*  

Attention is drawn to the following places, which may be of interest for search:

- Extruding onto a preformed part or component

**B29C 48/268**  

*{Throttling of the flow, e.g. for cooperating with plasticising elements or for degassing (flow control means B29C 48/255)}*

**Definition statement**  

*This place covers:*  

Explicit throttling

**References**  

*Limiting references*  

This place does not cover:

- Flow control means

*Informative references*  

Attention is drawn to the following places, which may be of interest for search:

- Throttling in mixers

**B29C 48/2694**  

*{Intermittent extrusion}*

**References**  

*Informative references*  

Attention is drawn to the following places, which may be of interest for search:

- Articles of definite length
**B29C 48/285**

Feeding the extrusion material to the extruder

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handling material to be moulded</td>
<td>B29C 31/02</td>
</tr>
<tr>
<td>Injection moulding, feeding</td>
<td>B29C 45/18</td>
</tr>
<tr>
<td>Conveying of bulk material</td>
<td>B65G 53/00</td>
</tr>
</tbody>
</table>

**B29C 48/286**

{Raw material dosing}

**Definition statement**

*This place covers:*

Raw material dosing in proximity to or during the feeding, e.g.:
- handling and feeding pre-formed parts in the correct velocity
- handling and/or mixing materials in foreseen quantities and feeding these.

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding in measured doses</td>
<td>B29C 31/06</td>
</tr>
<tr>
<td>Control aspects of volume</td>
<td>B29C 2948/92161, 2948/92657</td>
</tr>
<tr>
<td>Control aspects of weight</td>
<td>B29C 2948/9218, 2948/92676</td>
</tr>
<tr>
<td>Control aspects of dosing</td>
<td>B29C 2948/92333, 2948/92828</td>
</tr>
<tr>
<td>Mixing, kneading</td>
<td>B29B 7/00</td>
</tr>
<tr>
<td>Making preforms</td>
<td>B29B 11/00</td>
</tr>
<tr>
<td>Weighing</td>
<td>G01G 13/00, G01G 19/22</td>
</tr>
</tbody>
</table>

**B29C 48/287**

{Raw material pre-treatment while feeding (B29C 48/78 takes precedence)}

**Definition statement**

*This place covers:*

Pre-treatment in proximity to or during feeding, e.g. drying or cleaning
### References

#### Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal treatment of the extrusion moulding material or of preformed parts or layers</td>
<td>B29C 48/78</td>
</tr>
</tbody>
</table>

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditioning of physical pre-treatment of a material to be shaped</td>
<td>B29C 31/00</td>
</tr>
<tr>
<td>Drying of half products, e.g. preforms</td>
<td>B29C 37/0092</td>
</tr>
<tr>
<td>Control aspects of pre-treatment</td>
<td>B29C 2948/92342, B29C 2948/92838</td>
</tr>
<tr>
<td>Conditioning or physical pre-treatment of a material to be shaped</td>
<td>B29B 13/00</td>
</tr>
<tr>
<td>Pre-treatment of a material to be shaped in general</td>
<td>B29B 15/00</td>
</tr>
</tbody>
</table>

### B29C 48/288

{in solid form, e.g. powder or granules}

#### Definition statement

This place covers:

For example, feeding the main material in solid form

#### References

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid material</td>
<td>B29K 2105/25</td>
</tr>
<tr>
<td>Particle, powder, granule</td>
<td>B29K 2105/251</td>
</tr>
</tbody>
</table>

### B29C 48/2883

{of preformed parts, e.g. inserts fed and transported generally uninfluenced through the extruder or inserts fed directly to the die}

#### References

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containing inserts</td>
<td>B29K 2105/20</td>
</tr>
<tr>
<td>Use of materials as reinforcements</td>
<td>B29K 2201/00, B29K 2313/00</td>
</tr>
<tr>
<td>Use of materials as preformed parts, e.g. inserts</td>
<td>B29K 2601/00, B29K 2713/00</td>
</tr>
</tbody>
</table>
**B29C 48/2886**

{of fibrous, filamentary or filling materials, e.g. thin fibrous reinforcements or fillers}

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Moulding materials containing continuous reinforcements | B29K 2105/08 |
| Moulding materials containing short length reinforcements | B29K 2105/12 |
| Moulding materials containing containing fillers | B29K 2105/16 |
| Use of materials as reinforcements | B29K 2201/00 - B29K 2313/00 |
| Use of materials as fillers | B29K 2401/00 - B29K 2511/00 |

**B29C 48/29**

in liquid form

**Definition statement**

*This place covers:*

For example, feeding additives

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Plasticisers | B29K 2105/0038 |
| Liquid or viscous moulding materials | B29K 2105/0058 |

**B29C 48/295**

in gaseous form

**Definition statement**

*This place covers:*

For example, feeding of blowing agents

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Moulding material in a gaseous state | B29K 2105/0055 |
| Moulding material in plasma state | B29K 2105/0082 |
B29C 48/297

{at several locations, e.g. using several hoppers or using a separate additive feeding}

Definition statement
This place covers:
For example, using separate reinforcement feeding

B29C 48/3001

{characterised by the material or their manufacturing process}

Special rules of classification
Materials and coatings for calibrators are classified in the same groups as for dies, B29C 48/3001, B29C 48/3003

B29C 48/302

{being adjustable, i.e. having adjustable exit sections}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Flow control means before the exit section | B29C 48/2556 |

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

| Exit section | last part of die shaping the material |
**B29C 48/303**

{using dies or die parts movable in a closed circuit, e.g. mounted on movable endless support (B29C 48/35 takes precedence)}

**Definition statement**

*This place covers:*

![Diagram](image)

**References**

**Limiting references**

*This place does not cover:*

- Extrusion nozzles or dies with rollers [B29C 48/35]

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuously moving moulds in general</td>
<td>B29C 33/36</td>
</tr>
<tr>
<td>Casting between endless belts</td>
<td>B29C 39/16</td>
</tr>
<tr>
<td>Compression moulding between endless belts</td>
<td>B29C 43/228</td>
</tr>
<tr>
<td>Foaming between endless belts</td>
<td>B29C 44/30</td>
</tr>
<tr>
<td>Blow moulding of articles of indefinite length using moulds movable in closed circuit</td>
<td>B29C 49/0021</td>
</tr>
<tr>
<td>Blow moulding using moulds mounted on movable endless supports</td>
<td>B29C 49/38</td>
</tr>
</tbody>
</table>
**B29C 48/304**

{specially adapted for bringing together components, e.g. melts within the die}

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Co-extrusion of multi-component articles

**B29C 48/18**

**B29C 48/305**

having a wide opening, e.g. for forming sheets

**Definition statement**

*This place covers:*

For example, extrusion dies for panels or plates

**B29C 48/307**

{specially adapted for bringing together components, e.g. melts within the die}

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Co-extrusion of multi-component articles

**B29C 48/18**

**B29C 48/31**

{being} adjustable {, i.e. having adjustable exit sections}

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Flow control means before the exit section

**B29C 48/2556**

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit section</td>
<td>last part of die shaping the material</td>
</tr>
</tbody>
</table>
B29C 48/325

{being} adjustable {, i.e. having adjustable exit sections}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Flow control means before the exit section | B29C 48/2556 |

Glossary of terms
In this place, the following terms or expressions are used with the meaning indicated:

| Exit section | last part of die shaping the material |

B29C 48/335

Multiple annular extrusion nozzles in coaxial arrangement, e.g. for making multi-layered tubular articles

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Co-extrusion of multi-component articles | B29C 48/18 |

B29C 48/34

Cross-head annular extrusion nozzles, i.e. for simultaneously receiving moulding material and the preform to be coated

Definition statement
This place covers:
Side feeding the nozzle, i.e. nozzle axis not on the extruder axis, but normally perpendicular to it or at an angle

B29C 48/345

Extrusion nozzles comprising two or more adjacently arranged ports, for simultaneously extruding multiple strands, e.g. for pelletising

Definition statement
This place covers:
Multiple separate nozzle outlets next to each other.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Extrusion of particle, powder, granular shapes | B29C 48/04 |
| Extrusion of filamentary shapes              | B29C 48/05 |
| Extrusion followed by under-water pelletizing | B29B 9/065 |
| Producing filamentary material               | B29D 99/0078 |
| Electro spinning                             | D01D 5/00  |
| Melt blowing                                 | D04H 1/54  |

Special rules of classification

Pure melt-extrusion where the filaments are not shaped/formed by extrusion through the die but with other extrusion aspects should be allocated the Indexing Code B29C 48/00, but not an inventive or additional classification in B29C 48/345 for this aspect.

B29C 48/35

with rollers

Definition statement

This place covers:

Rollers shape the material exiting the extruder nozzle - normally nozzle exit at a roller or between rollers
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Calendering

B29C 43/24

B29C 48/36

Means for plasticising or homogenising the moulding material or forcing it through the nozzle or die

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Means for plasticising or homogenising in injection moulding

B29C 45/46

B29C 48/37

Gear pumps

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Gear pumps

F04C 2/08

B29C 48/375

Plasticisers, homogenisers or feeders comprising two or more stages

Definition statement

This place covers:
For example, one plasticiser after the other

B29C 48/38

using two or more serially arranged screws in the same barrel

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Multi stage plasticising using separate plasticisers, e.g. screw extruder followed by a gear pump

B29C 48/375

Mixers with consecutive casings or screws

B29B 7/487
B29C 48/387
{using a screw extruder and a gear pump}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Injection moulding using screws and injection ram or piston | B29C 45/54 |

B29C 48/39
a first extruder feeding the melt into an intermediate location of a second extruder

Definition statement

This place covers:
Feeding a plasticised melt into another plasticised melt, e.g. feeding one plasticised melt into the middle of an extruder plasticising another melt.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Feeding of the raw material to be extruded | B29C 48/285 |

B29C 48/395
using screws surrounded by a cooperating barrel, e.g. single screw extruders

Definition statement

This place covers:
Screws or worms that transport, melt, mix and pump the material out through the nozzle and where the interaction between barrel to screw or screw to screw is important.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Means for plasticising or homogenising using screws in injection moulding | B29C 45/47 |
| Design, e.g. calculations, experiments or theory, e.g. for intermeshing screws, mechanical strength or flow | B29C 48/251 - B29C 48/2519 |
| Flow control by valves | B29C 48/2552 |
| Explicit throttling | B29C 48/268 |
| Cleaning or purging | B29C 48/2715 |
| Screws | B29C 48/505 |
| Screw elements, i.e. element shapes affecting flow | B29C 48/51 - B29C 48/67 |
Barrels | B29C 48/68
Venting | B29C 48/766
Heating or cooling at plasticising zone | B29C 48/80
Handheld extruders | B05C 17/00
Mixers with screw or helix | B29B 7/42
Presses using screws or worms | B30B 11/24

**B29C 48/40**

using two or more parallel screws {or at least two parallel non-intermeshing screws}, e.g. twin screw extruders

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

Mixers with two or more intermeshing devices | B29B 7/46

**B29C 48/42**

Non-identical or non-mirrored screws

**Definition statement**

*This place covers:*

For example, the screws having differing lengths or different screw element types

**B29C 48/425**

using three or more screws (serially arranged screws B29C 48/38, B29C 48/385)

**Definition statement**

*This place covers:*

For example, screws arranged next to each other in a circular configuration

**References**

*Limiting references*

This place does not cover:

Plasticizers, homogenisers or feeders using two or more serially arranged screws | B29C 48/38, B29C 48/385

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

Mixers with three or more screws | B29B 7/485
**B29C 48/435**

Sub-screws

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Mixers with three or more screws | B29B 7/485 |

**B29C 48/45**

Axially movable screws

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Axially movable screws in injection moulding | B29C 48/46 |

**B29C 48/46**

using vanes

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Roller extrusion nozzles | B29C 48/45 |

**B29C 48/475**

using pistons, accumulators or press rams

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Injection moulding using screws and injection ram or piston | B29C 48/49 |

**B29C 48/49**

using two or more extruders to feed one die or nozzle

**Definition statement**

This place covers:

For example, means to combine melt flows, e.g. using adapter blocks.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| General arrangement or layout of extrusion plants | B29C 48/025 |

B29C 48/501

{Extruder feed section}

Definition statement

This place covers:

Constructional details of the section of the extruder that is located around the inlet of material, details of cylinder or screw in that particular location.

B29C 48/503

{Extruder machines or parts thereof characterised by the material or by their manufacturing process (B29C 48/256 takes precedence)}

Definition statement

This place covers:

For example, first time assembly

For example, cooling a barrel lining and inserting it into the barrel

References

Limiting references

This place does not cover:

| Exchangeable extruder parts | B29C 48/256 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Moulds characterised by the manufacturing process | B29C 33/3842 |
| Manufacturing dies | B23P 15/00 |
| Use of materials as mould material | B29K 2801/00 - B29K 2913/00 |

B29C 48/505

Screws

Definition statement

This place covers:

Details of the construction and layout of the screw.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Means for plasticising or homogenising using screws in injection moulding</th>
<th>B29C 45/47</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection moulding, details, screws</td>
<td>B29C 45/60</td>
</tr>
<tr>
<td>Design, e.g. calculations, experiments or theory, e.g. for intermeshing screws, mechanical strength or flow</td>
<td>B29C 48/251 - B29C 48/2519</td>
</tr>
<tr>
<td>Drives, screw supports, bearings</td>
<td>B29C 48/2522</td>
</tr>
<tr>
<td>Flow control by valves</td>
<td>B29C 48/2552</td>
</tr>
<tr>
<td>Mounting or handling of screws</td>
<td>B29C 48/2561</td>
</tr>
<tr>
<td>Exchangeable screw parts or segments, e.g. modular screws</td>
<td>B29C 48/2564</td>
</tr>
<tr>
<td>Inserts, i.e. small exchangeable parts, e.g. for replacement due to wear</td>
<td>B29C 48/25682</td>
</tr>
<tr>
<td>Explicit throttling</td>
<td>B29C 48/268</td>
</tr>
<tr>
<td>Cleaning or purging of screws</td>
<td>B29C 48/2715</td>
</tr>
<tr>
<td>Feeding, e.g. blowing agents, through a screw</td>
<td>B29C 48/298</td>
</tr>
<tr>
<td>Screw elements, i.e. element shapes affecting flow</td>
<td>B29C 48/51 - B29C 48/67</td>
</tr>
<tr>
<td>Venting through the screw</td>
<td>B29C 48/766</td>
</tr>
<tr>
<td>Heating or cooling screws</td>
<td>B29C 48/80</td>
</tr>
<tr>
<td>Screws for mixers</td>
<td>B29B 7/42 - B29B 7/48</td>
</tr>
<tr>
<td>Presses using screws or worms</td>
<td>B30B 11/24</td>
</tr>
<tr>
<td>Details of the screws of screw conveyors</td>
<td>B65G 33/26</td>
</tr>
</tbody>
</table>

B29C 48/515

for auxiliary fluids, e.g. foaming agents

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Thermal treatment of the extrusion moulding material or of preformed parts or layers, e.g. by heating or cooling</th>
<th>B29C 48/78</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal treatment of the stream of extruded material, e.g. cooling</td>
<td>B29C 48/88</td>
</tr>
</tbody>
</table>

B29C 48/59

characterised by details of the thread, i.e. the shape of a single thread of the material-feeding screw

Definition statement

This place covers:

For example, openings, interruptions or changing thread thickness
B29C 48/625

characterised by the ratio of the threaded length of the screw to its outside diameter \([L/D\) ratio]

**Definition statement**

*This place covers:*

For example, section length \(L/D\)

B29C 48/63

having sections without mixing elements or threads, i.e. having cylinder shaped sections

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| With discontinuous threads | B29C 48/605 |

B29C 48/68

Barrels or cylinders

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Injection moulding, details, barrels or cylinders | B29C 45/62 |

B29C 48/685

characterised by their inner surfaces, e.g. having grooves, projections or threads

**Definition statement**

*This place covers:*

Irregular inner surfaces being not simple cylindrical or conical surfaces

B29C 48/69

Filters or screens for the moulding material

**Definition statement**

*This place covers:*

Filters to prevent contaminants in the melt from reaching the nozzle and ending up in the finished product
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection moulding cleaning equipment</td>
<td>B29C 45/24</td>
</tr>
<tr>
<td>Sealings for filters</td>
<td>B29C 48/2545</td>
</tr>
<tr>
<td>Flow control, e.g. valves in proximity to filters</td>
<td>B29C 48/2554</td>
</tr>
<tr>
<td>Cleaning or purging</td>
<td>B29C 48/2725</td>
</tr>
<tr>
<td>Filters in general</td>
<td>B01D 29/00</td>
</tr>
<tr>
<td>Changing filters</td>
<td>B01D 35/12</td>
</tr>
<tr>
<td>Filtering liquids in general</td>
<td>B01D 39/00</td>
</tr>
<tr>
<td>Condition, form or state of moulded materials, containing impurities</td>
<td>B29K 2105/065</td>
</tr>
</tbody>
</table>

**B29C 48/70**

comprising means for dividing, distributing and recombining melt flows

Definition statement

*This place covers:*

Divided melts merging before the die zone

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static mixers, e.g. breaker plates in the end of the plastizising unit</td>
<td>B29C 48/362</td>
</tr>
<tr>
<td>Non-actuated dynamic mixing devices, e.g. free rotating mixing elements</td>
<td>B29C 48/363</td>
</tr>
<tr>
<td>Flow division and recombination for layer multiplication</td>
<td>B29C 48/71</td>
</tr>
</tbody>
</table>

**B29C 48/705**

{in the die zone, e.g. to create flow homogeneity}

Definition statement

*This place covers:*

Divided melts merging in the die zone

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow division and recombination for layer multiplication</td>
<td>B29C 48/71</td>
</tr>
</tbody>
</table>
B29C 48/72
Feedback means, i.e. part of the molten material being fed back into upstream stages of the extruder

Definition statement
This place covers:
Melt flow feed-back means, i.e. a part of the melt is fed back into the extruder line when still molten

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Feed-back in the sense of measuring/controlling/regulating | B29C 48/92 |

B29C 48/74
Bypassing means, i.e. part of the molten material being diverted into downstream stages of the extruder

Definition statement
This place covers:
Part of the melt by-passes a part of the extruder to re-enter at a later stage

B29C 48/76
Venting {, drying} means; Degassing means

Definition statement
This place covers:
Steam, gas or vapour arising during heating and melting of the material is let out of the extruder in a controlled manner

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Venting or degassing means during injection moulding | B29C 45/63 |
| Flow control by valves | B29C 48/2552 |
| Explicit throttling | B29C 48/268 |
| Venting or degassing during mixing or kneading | B29B 7/84 |
B29C 48/762
{Vapour stripping}

Definition statement
This place covers:
Removing a component, e.g. by adding a second component binding to the first component

B29C 48/763
{Vent constructions, e.g. venting means avoiding melt escape}

Definition statement
This place covers:
For example, means for improving venting

B29C 48/765
{in the extruder apparatus}

Definition statement
This place covers:
For example, venting of the melt in a gear pump or in a separate venting chamber

B29C 48/766
{in screw extruders}

Definition statement
This place covers:
For example, venting through a screw, a screw bearing or a feed inlet

B29C 48/78
Thermal treatment of the extrusion moulding material or of preformed parts or layers, e.g. by heating or cooling

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Raw material pretreatment</th>
<th>B29C 48/287</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditioning or physical pre-treatment of a material to be shaped</td>
<td>B29B 13/00</td>
</tr>
<tr>
<td>Pre-treatment of a material to be shaped in general</td>
<td>B29B 15/00</td>
</tr>
</tbody>
</table>
**B29C 48/88**

Thermal treatment of the stream of extruded material, e.g. cooling

**Definition statement**

*This place covers:*

Heating or cooling of the material having left the extruder nozzle

**B29C 48/90**

with calibration or sizing, i.e. combined with fixing or setting of the final dimensions of the extruded article

**Definition statement**

*This place covers:*

Finalising shaping of the article while cooling takes place to correct for warp and shrinking

**B29C 48/902**

{internally}

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>B29C 55/285</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by stretching of blown tubular films using internal mechanical means, e.g. mandrel</td>
</tr>
</tbody>
</table>

**B29C 48/914**

{cooling drums}

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>B29C 33/044</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moulds and cores with heating or cooling means in rolls, calenders or drums</td>
</tr>
</tbody>
</table>

**B29C 48/919**

{using a bath, e.g. extruding into an open bath to coagulate or cool the material}

**Definition statement**

*This place covers:*

For example, using a bath for coagulatable material
**B29C 48/92**

Measuring, controlling or regulating

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Design of extruder parts, e.g. by modelling based on mathematical theories or experiments</th>
<th>B29C 48/251</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring, controlling or regulating in general</td>
<td>G01</td>
</tr>
<tr>
<td>Taking samples</td>
<td>G01N 1/2035</td>
</tr>
<tr>
<td>Adaptive control, learning, e.g. fuzzy logic</td>
<td>G05B 13/0265</td>
</tr>
</tbody>
</table>

**Special rules of classification**

For all documents to be classified in **B29C 48/92** for inventive or additional information, all measuring and controlling aspects therein must be identified by adding the relevant codes in the **B29C 2948/92** indexing scheme.

In case of classification in the **B29C 2948/92** indexing scheme, the allocation of **B29C 48/92** as additional information is optional.

**B29C 48/94**

Lubricating

**Definition statement**

This place covers:

Using internal lubrication, e.g. adding a plasticiser, or using external lubrication, e.g. adding a film of lubricating material in the interface between the melt and the extruder, die, calibrator or conveyor.

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Lubricating for moulds or cores in general</th>
<th>B29C 33/56</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricating means for injection moulding</td>
<td>B29C 45/83</td>
</tr>
<tr>
<td>Moulding materials containing plasticisers</td>
<td>B29K 2105/0038</td>
</tr>
<tr>
<td>Liquid or viscous moulding materials</td>
<td>B29K 2105/0058</td>
</tr>
<tr>
<td>Moulding materials having a particular viscosity</td>
<td>B29K 2105/0094</td>
</tr>
</tbody>
</table>

**Special rules of classification**

Materials and coatings for calibrators are classified in the same groups as for dies, **B29C 48/3001**, **B29C 48/3003**.
B29C 48/95
by adding lubricant to the moulding material

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Lubricating compositions | C10M |

B29C 49/00
Blow-moulding, i.e. blowing a preform or parison to a desired shape within a mould; Apparatus therefor {(extrusion moulding of tubular films B29C 48/10; enlarging tube ends using pressure difference B29C 57/08)}

Definition statement
This place covers:
Blow moulding methods, blow moulding apparatus and articles obtained by blow moulding, when these articles are characterised by the blow moulding method.

Simulation of blow moulding or any other simulated aspect related to blow moulding, e.g. simulating heating a preform before blow moulding. This aspect is covered in the main group B29C 49/00

References

Limiting references
This place does not cover:

| Injection a fluid e.g. air in molten plastic | B29C 45/1704 |
| Extrusion blowing of continuous tubular films | B29C 48/10 |
| Vacuum or pressure forming of sheet like materials | B29C 51/10 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Making of balloon catheters | A61M 25/1027 |
| Metal blow moulding | B21D 26/00 |
| Making preforms per se | B29B 11/00 |
| Packaging individual articles in containers or receptacles whereby the machines incorporate means for making the containers | B65B 3/022 |
| Labelling of blow moulded articles outside the mould | B65C 3/00 |
| Glass blow moulding | C03B 9/00 |

Special rules of classification
- For articles and materials, as much as possible additional classification by adding the Indexing Codes of B29K and B29L is recommended.
- If more than 4 different thermoplastic materials are described in the disclosure then the Indexing Code B29K 2101/12 should be allocated. In addition only up to 4 of the disclosed uncommon thermoplastic materials are classified (common thermoplastics for blow moulding are PET, PE, PP) by allocating the appropriate Indexing Code as provided in B29K 2001/00 - B29K 2101/00.

- Inventive and additional information disclosed in documents to be classified should be identified by allocation the appropriate classification codes of B29C 49/00 - B29C 49/78. In particular attention should be paid to the so called break down Indexing Codes, which are only present at additional information level, but should be allocated if disclosed in the document to be classified.

- If during blow moulding also vacuum is used, or only vacuum is used for deformation of the tubular parison then one or both of the following classification codes are additionally allocated: B29C 2791/006 and/or B29C 2791/007.

- Making of balloon catheters by combined operations, e.g. an additional moulding technique to blow moulding is additionally classified in one of the sub groups A61M 25/1027.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preform or parison</td>
<td>A tubular object obtained by moulding substantially consisting of plastic material, which has to undergo an additional processing step, e.g. blow moulding, to obtain its final shape, examples are: tubes, extruded parisons, two parallel sheets which behave like tubular preforms, injection moulded tubular preforms normally with one end closed.</td>
</tr>
<tr>
<td>Blowing</td>
<td>Using a pressurized blowing gas to deform the tubular preform or parison; but also applying a vacuum on one side of the tubular article, since the ambient pressure is deforming the tubular preform or parison.</td>
</tr>
</tbody>
</table>

B29C 49/0005

{characterised by the choice of material}

Definition statement

This place covers:
- Blow moulding processes, whereby their disclosure focuses on the materials or material parameters.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Compositions of macromolecular compounds in general | C08L 1/00 - C08L 101/10 |

Special rules of classification

If reinforcing material is comprised in the material to be thermoformed, then the following Indexing Codes should additionally be allocated: the appropriate subgroups of B29K 2105/06 and B29K 2201/00 - B29K 2313/00.
**B29C 49/0015**

{for making articles of indefinite length, e.g. corrugated tubes}

**Definition statement**

*This place covers:*

- WO02/36333

![Diagram](FIG. 3B)

**B29C 49/0021**

{using moulds or mould parts movable in a closed path, e.g. mounted on movable endless supports}

**Definition statement**

*This place covers:*

- Blow moulding processes whereby either only pressure, pressure and vacuum or only vacuum is used during the forming process of indefinite length articles, as long as the preform is three dimensionally deformed.
Special rules of classification

It is highly desirable that all documents classified in **B29C 49/0021** the appropriate Indexing Code in **B29L 2023/00** is added to identify the type of tubular product.
B29C 49/0026

{using independent mould parts, i.e. the mould parts not being interconnected, e.g. for speeding up the transfer of the moulds to the beginning of the moulding area}

Definition statement

This place covers:

- EP2045066
B29C 49/0031
{for making articles having hollow walls}

Definition statement
This place covers:
- JP60149432

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Hollow walled articles | B29L_2024/00 |
B29C 49/0042

{without using a mould}

Definition statement

This place covers:
- FR2848906

B29C 49/0047

{Sheet blow-moulding, i.e. using at least two parallel sheets or a folded sheet as a preform}

Definition statement

This place covers:
- Blow moulding processes, whereby the sheets are first welded due to mould closing at it's periphery and then the blow moulding operation is executed.
- Pressurised fluid, vacuum or pressurised fluid and vacuum can be used for performing the blow moulding operation.
References

Limiting references

This place does not cover:

Welding and inflating for the production of air filled cushions

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Twin sheet forming</th>
<th>B29C 51/105</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two sheets being thermoformed in separate mould parts and joined together while still in the mould</td>
<td>B29C 51/267</td>
</tr>
<tr>
<td>Blister packaging</td>
<td>B65B 9/04</td>
</tr>
<tr>
<td>Blister products</td>
<td>B65D 81/03</td>
</tr>
</tbody>
</table>

B29C 49/0073

{characterised by the parison configuration, e.g. nestable (B29C 49/22 takes precedence)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Making preforms characterised by structure or composition | B29B 11/14 |

Special rules of classification

- The use of the indexing of preforms for blow-moulding bottles, using the coding scheme under B29B 2911/14, is obligatory when the structure of the preform differs from the conventional shape (meaning: one layer, open neck, flange, cylindrical body, closed semispherical end).
- If a preform is claimed and in the description it is mentioned that the preform would be suitable for blow moulding --> then the additional classification code B29C 49/0073 is allocated to this document and the document is additional classified in B29B 11/14.

- If a tubular reheated parison (meaning: has two open ends) is used during the blow moulding process then, the following Indexing Code should be allocated: B29K 2105/258

B29C 49/0078

{Parisons having internal or external ribs}

Definition statement

This place covers:
Top of Form
EP1998945
B29C 49/0084

{the internal ribs being connected to the opposite wall, e.g. forming an internal separating wall}

Definition statement

This place covers:

[Fig. 5]
B29C 49/022
{the parison being partly injected and partly extruded}

Definition statement

This place covers:

B29C 49/04
Extrusion blow-moulding

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Making preforms by extrusion moulding | B29B 11/10 |

Special rules of classification

- If the parison shape, e.g. the cross section or thickness distribution, is different from the standard cylindrical shape, then the to be classified document should receive a class in B29C 49/0073 as inventive information and only B29C 49/04 as additional information.

- If the parison is multilayered, then the to be classified document should receive a class in B29C 49/22 as inventive information and only B29C 49/04 as additional information.
**B29C 49/06**

**Injection blow-moulding** {(introducing a fluid into the interior of the injected material which is still in a molten state **B29C 45/1704**)}

**Definition statement**

*This place covers:*

The injection moulding apparatus, with which the preform is produced,

The blow moulding apparatus, with which the preform is blow moulded.

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>Injection moulding</th>
<th>B29C 45/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making preforms by injection moulding</td>
<td>B29B 11/08</td>
</tr>
</tbody>
</table>

**Special rules of classification**

- The additional information classification **B29C 49/06** is allocated to a document to be classified, when the preform is produced by injection moulding but when the injection moulding apparatus is not disclosed in greater detail.

- **B29C 49/42** has to be allocated as additional information where appropriate.

- For the heating or cooling of preforms, as much as possible additional classification by adding the Indexing Codes of **B29C 49/64**, especially **B29C 49/6409** and **B29C49/B3** is recommended.
B29C 49/061
{with parison holding means displaceable between injection and blow stations}

Definition statement

*This place covers:*
- EP0228106
**Definition statement**

This place covers:
- DE10061744
B29C 49/063

{with the parison axis held in the plane of rotation}

Definition statement

This place covers:

- US2008118686
**B29C 49/064**

{following a rectilinear path, e.g. shuttle-type}

**Definition statement**

*This place covers:*

- US4540543

---

**B29C 49/08**

**Biaxial stretching during blow-moulding {with or without prestretching}**

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

| Biaxial stretching | stretching in two directions whereby one stretching component must be in longitudinal direction of the preform or in extrusion direction of an extruded parison |

---

**B29C 49/085**

{without prestretching}

**Definition statement**

*This place covers:*

Blow moulding processes, whereby the preform length before blow moulding is shorter than the mould cavity. The preform has therefore also a stretching component in the longitudinal direction during the blowing operation.
**B29C 49/10**

**using mechanical means {for prestretching}**

**Definition statement**

*This place covers:*

- FR2516855
第1図
第2図

JP58016826

JP58045030
B29C 49/12
Stretching rods

Definition statement

This place covers:
- US2010/252948
B29C 49/14

Clamps

Definition statement

This place covers:
- EP0434277
using pressure difference {for prestretching}, e.g. pre-blowing {\text{(B29C 49/649 takes precedence)}}

**Definition statement**

*This place covers:*

Blow moulding processes, whereby the pressure difference is used to stretch the preform in its longitudinal direction.
B29C 49/18

using several blowing steps (**B29C 49/16** takes precedence)

**Definition statement**

*This place covers:*

- Blow moulding using several blowing steps, whereby between each blowing step for a period of time, depressurisation is being applied, thereby causing a period with atmospheric pressure inside the preform/container.
**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Multiple blow moulding steps, whereby one step is used to expand the preform in longitudinal direction</th>
<th>B29C 49/16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple blow moulding steps followed by additional heat shrinking</td>
<td>B29C 49/6472</td>
</tr>
</tbody>
</table>

**Special rules of classification**

- Multiple blow moulding steps, with longitudinal stretching during each blowing step are additionally classified in B29C 49/08 or one of its subgroups
As example the following document JP59115816 should be classified B29C 49/12 and B29C 49/18.

B29C 49/20
of articles having inserts or reinforcements {; Handling of inserts or reinforcements}

Definition statement
This place covers:
- Auxiliary operations or auxiliary means relating to inserts or reinforcements, e.g. handling or transferring of inserts

Special rules of classification
Details of the location of the insert (on the inside or outside of the final article), handling of the inserts (e.g. feeding into the mould) or treatment of the inserts (e.g. preheating) are identified by the allocation of break down Indexing Codes, which are only present at additional information level.

When details of inserts or reinforcements are indicated, then it is highly desirable to allocate additionally the following classification codes for additional information:
- B29K 2601/00 - B29K 2713/02
- B29K 2201/00- B29K 2313/02

B29C 49/22
using multilayered preforms or parisons

Definition statement
This place covers:
- Multilayered parisons produced by extrusion moulding
- Parisons having loose layers before blow moulding
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>tubular layered products per se</th>
<th>B32B 1/08</th>
</tr>
</thead>
<tbody>
<tr>
<td>multilayered plastic containers, e.g. bottles</td>
<td>B65D 1/0215</td>
</tr>
</tbody>
</table>
Special rules of classification

- Specific multilayered aspects of the preform for blow moulding of bottles are additionally classified in B29B 11/14

- If applicable, it is highly desirable to allocate additional classification in B29C 49/0073 for inventive information related to the geometrical distribution or dimensions of the layers

B29C 49/221

{at least one layer being injected (injection moulding of multilayered parisons B29C 45/1643, B29C 45/1646)}

Definition statement

This place covers:

- US2010227092

![Figures 1, 2, 3](image)
B29C 49/24
Lining or labelling

Definition statement

This place covers:
Lining

- DE102004000046
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Lining or sheeting in general                  | B29C 63/00 |
| Producing labels                              | B31D 1/02  |
| Labelling other than flat surfaces in general | B65C 3/00  |
| In mould labelled containers                  | B65D 23/0864 |
| Labels in general e.g. for thermo adhesion    | G09F 3/04  |

Special rules of classification

If the label itself is specific then the Indexing Code B29L 2031/744 should be allocated

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

| Lining  | Covering the whole outer and/or inner surface of articles with a heated preform or parison. The heated preform or parison is stretched and three dimensionally deformed. |
| Labelling | Connecting a label which is inside of a mould to a heated preform or parison while the preform or parison is blow moulded. Often also called “in mould labelling” |
B29C 49/2408

{Inserting labels or films into blow-moulds, e.g. in-mould-labellers}

Definition statement

This place covers:

- US5256365
**B29C 49/26**

inner lining of tubes

**Definition statement**

*This place covers:*
- EP0585855

![Figure 2](image)

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coating the interior of hollow articles by extrusion moulding</td>
<td>B29C 48/152</td>
</tr>
<tr>
<td>Lining of internal surfaces by applying preformed layers or sheets of plastic</td>
<td>B29C 63/26</td>
</tr>
</tbody>
</table>

**B29C 49/28**

Blow-moulding apparatus

**Special rules of classification**

- If the alleged inventive information of the document to be classified is already classified somewhere else then the classification as provided for in B29C 49/28 - B29C 49/40 should be allocated as additional information only.
B29C 49/32
moving "to and fro"

Definition statement
This place covers:
- US5976452

FIG. 4
the mould parts moving "hand-over-hand"

Definition statement

This place covers:
- US4988279
B29C 49/36
rotatable about one axis

Definition statement
This place covers:
- DE102004057102

DE 10 2004 057 102 A1 2006.06.01
Anhängende Zeichnungen

US5433916

FIG. 1
**B29C 49/38**

mounted on movable endless supports {(*B29C 49/0021 takes precedence*)}

**Definition statement**

*This place covers:*
- articles of definitive length, bottles
- US3597516
- JP3197117
References

Limiting references

This place does not cover:

Using moulds movable in a closed path for blow moulding of articles of indefinite length  

B29C 49/0021
**B29C 49/40**

on co-operating drums

**Definition statement**

*This place covers:*

- DE2210445

---

**B29C 49/42**

Component parts, details or accessories; Auxiliary operations

**Definition statement**

*This place covers:*

- details of extrusion dies used during blow moulding
- closing parison ends before blow moulding e.g. with a fluid stream or by grippers
- antistatic treatment of preforms
- cleaning of preforms
- sterilisation of preforms
- mould change
- cutting and recycling material
- avoiding malfunctioning
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Handling of moulds between a mould store and a moulding machine in general | B29C 31/006 |
| Maintenance of moulds namely cleaning in general | B29C 33/72 |
| Extrusion nozzles or dies in general | B29C 48/30 |
| Sterilisation in general | A61L 2/00 |

B29C 49/4205

{Handling means, e.g. transfer, loading or discharging means (handling of inserts or reinforcements B29C 49/20; handling of labels B29C 49/2408)}

Definition statement

This place covers:
- gripping and holding means for preforms, parisons or blown articles
- adjustable transporting means depending on the size of the preforms, parisons or blown articles
- air conveyors for preforms or blown articles
- orientating unorientated preforms
- feeding of preforms or parisons
- FR2864050

![Fig. 1](image)
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Handling materials in general | B65G 47/00 |
B29C 49/421
{for blown articles}

Definition statement

This place covers:
- DE19654350
B29C 49/4215
{for increasing the space between preforms, e.g. in order to perform the blow moulding step}

Definition statement
This place covers:
- WO02053350
**B29C 49/4242**

{Means for deforming the parison prior to the blowing operation (B29C 49/08 takes precedence)}

**Definition statement**

This place covers:
- pulling the extruded parison through the mould
- moving the mould or the extruder head while extruding the parison
- air floating for helping feeding of the parison through the mould
- using grippers which deform the parison during extrusion or during transportation
other examples:

EP0693358
References

Limiting references

This place does not cover:

| Bending of tubes | B29C 53/083 |
**B29C 49/4247**

{Spreading or extending means}

**Definition statement**

*This place covers:*

- spreading the open end or other parts of the preform or parison by mechanical means or vacuum grippers before blow moulding

- EP1612031

**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>shaping of tube ends</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 57/00</td>
</tr>
</tbody>
</table>
**B29C 49/44**

for applying pressure through the walls of an inflated bag

**Definition statement**

This place covers:
- EP1859913

**B29C 49/46**

characterised by using a particular environment or blow fluids other than air

**Definition statement**

This place covers:
- Inert gas as blowing fluid
- Reactive gas as a blowing fluid
- Sterile gas as a blowing fluid
- Hot gas as a blowing fluid
- Filtered air as a blowing fluid
- Explosive gas mixture as a blowing fluid
- Incompressible blowing fluids (e.g. filling liquid is used as blowing fluid)
- Clean rooms
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Method or apparatus for sterilising in general | A61L 2/00 |
| Cleaning in general                           | B08B 1/00 |
| Concurrent cleaning, filling, and closing of bottles without a blow moulding operation | B67C 7/00 |

Special rules of classification

- Incompressible blowing fluids which stay in the formed container after blow moulding have to be also classified in B65B 3/022

B29C 49/48

Moulds

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Moulds characterised by the material or the manufacturing process in general | B29C 33/38 - B29C 33/405 |
B29C 49/4802

{with means for locally compressing part(s) of the parison in the main blowing cavity}

Definition statement

This place covers:
- JP8034052
B29C 49/4815
{by means of movable mould parts}

Definition statement
This place covers:
- EP1688233
B29C 49/4817
{with means for closing off parison ends}

Definition statement

This place covers:
- EP1116572
B29C 49/482
{with means for moulding parts of the parisons in an auxiliary cavity, e.g. moulding a handle}

Definition statement
This place covers:
- WO2007063155
B29C 49/4823
{with incorporated heating or cooling means}

Definition statement

This place covers:
- WO2005025835
- WO03033242
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Heating or cooling of moulds in general              | B29C 33/02 |

Special rules of classification

When details of the heating or cooling means are indicated, then it is highly desirable to allocate additionally the following corresponding Indexing Codes for additional information:

- B29C 35/02, B29C 35/04 - B29C 2035/0883
- B29C 35/16, B29C 2035/1616 - B29C 2035/1691
B29C 49/50
having cutting or deflashing means

Definition statement
This place covers:
-EP1645397
B29C 49/52
having decorating or printing means

Definition statement
This place covers:
- EP1005975

Fig. 1
Fig. 2
Fig. 3
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Moulds characterised by the shape of the moulding surface in general  **B29C 33/42**
B29C 49/54
for undercut articles

Definition statement

This place covers:
- EP1908571
B29C 49/541
{having a recessed undersurface}

Definition statement
This place covers:
- US2008283533
B29C 49/56

Opening, closing or clamping means

Definition statement

This place covers:

- WO2010136667 (cam driven opening and closing means)
- WO0192168 (mechanical opening closing mechanism)

FR2790702 (spindle driven [screw driven] opening closing mechanism)
EP1880826 (fluid driven clamping means via channel 25)

- US2008031994 (closing and clamping toggle mechanism)
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Opening, closing or clamping of moulds in general

B29C 33/20 - B29C 33/28
**B29C 49/58**

Blowing means {{B29C 45/1734 takes precedence}}

**Definition statement**

*This place covers:*
- WO2009010505
- JP6218801
Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "blowing means", "blow pin", "blowing nozzle" and "blowing mandrel"
B29C 49/60

Blow-needles

**Definition statement**

*This place covers:*

- EP1053859 (support 30 helps piercing the parison)
- JP9216277 (retractable blow needle, blow needle has special blow openings)

- US5078948 (blow needle has special means to facilitate the piercing)
B29C 49/62

Venting means

Definition statement

This place covers:
- US6660216
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Venting means for moulds in general:</th>
<th>B29C 33/10</th>
</tr>
</thead>
</table>
B29C 49/64
Heating or cooling preforms, parisons or blown articles

References

Limiting references
This place does not cover:

| Cooling of preforms after the injection moulding process, meaning using cold preforms for blow moulding process | B29C 45/7207 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Heating, cooling or curing in general | B29C 35/00 |
| Heating of preforms in general | B29B 13/023 |

Synonyms and Keywords
In patent documents, the following words/expressions are often used as synonyms:
- "glass transition temperature", "Tg" and "vitreous transition temperature"

B29C 49/6409
{THERMAL CONDITIONING OF PREFORMS (B29C 49/68 TAKES PRECEDENCE)}

Definition statement
This place covers:
Heating and cooling preforms before the blow moulding operation.

B29C 49/6418
{BY REHEATING COLD PREFORMS IN A SINGLE STAGE (B29C 49/6436 TAKES PRECEDENCE)}

Definition statement
This place covers:
- Reheating cold preforms in one continuous uninterrupted heating phase.
-WO9703805 (row of preforms are transported through a heating oven)
**B29C 49/6427**

{by cooling hot or molten preforms in a single stage (B29C 49/6436 takes precedence)}

**Definition statement**

This place covers:

- Cooling hot or molten preforms in one continuous uninterrupted cooling phase (mainly for injection moulded preforms who do not have the correct blow moulding temperature yet).

- US4180379 (reference number 14 shows a cooling station)

B29C 49/6436
{producing a temperature differential}

Definition statement

This place covers:

- US5681521

- US5681521
B29C 49/6445
{through the preform length}

Definition statement

This place covers:
- US5920677

FIG 3
**B29C 49/6454**

{along the preform thickness}

**Definition statement**

*This place covers:*

- EP0521773
B29C 49/6463
{Mandrels or cores specially adapted for heating or cooling preforms}

Definition statement
This place covers:
- GB2137921

B29C 49/6472
{in several stages (B29C 49/6409 takes precedence)}

Definition statement
This place covers:
- Discontinuous heating having at least one additional phase where the preform is not heated, or even shortly cooled before the next heating phases starts
B29C 49/6481

{using several mould cavities for each article}

Definition statement

This place covers:

- GB1481637 (all moulds are heated to make the next blowing step possible)
B29C 49/649
{at least one stage being a heating stage used for shrinking of a preform prior to a subsequent blowing stage}

Definition statement
This place covers:
- EP0683029
B29C 49/66

Cooling by refrigerant introduced into the blown article

Definition statement

This place covers:
- JP56013141
- EP1314535

FIG. 2
**B29C 49/68**

Ovens specially adapted for heating preforms or parisons

**Definition statement**

*This place covers:*

the heating device (oven) functioning as a whole

**Special rules of classification**

Details of ovens specially adapted for heating preforms or parisons are classified in [B29C 49/64](#).

---

**B29C 49/70**

Removing or ejecting blown articles from the mould

**Definition statement**

*This place covers:*

Means to facilitate the removing or ejecting of blown articles from the mould. These ejecting means are typically located in the mould.

WO2004022311  

---

**FIG. 4**  

**FIG. 5**  

**FIG. 6**
References

Limiting references

This place does not cover:

Means which enter from the outside of the mould to pick up the blown articles

B29C 49/421
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Moulds in general with means for to facilitate the removal of articles | B29C 33/44 |

Glossary of terms
In this place, the following terms or expressions are used with the meaning indicated:

| ejecting | separating moulded products from the mould cavity |

B29C 49/72
Deflashing outside the mould

Definition statement
This place covers:

![Diagram of moulding process]

FIG. 5

![Diagram of moulding process]

FIG. 6
**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Deflashing in general</th>
<th>B29C 37/02</th>
</tr>
</thead>
</table>
B29C 49/74
Deflashing the neck portion

Definition statement
This place covers:
- US2005284275
Figure 1:

Figure 2:
B29C 49/76

Neck calibration

Definition statement

This place covers:
- US4115496
- US4187070
- US4187070

- US4187070
**B29C 49/78**

Measuring, controlling or regulating

**Special rules of classification**

Documents classified in B29C 49/78 and subgroups are indexed by allocating additionally the B29C 2949/00 Indexing Codes.

**B29C 49/783**

{the blowing pressure}

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Control of fluid pressure in general | G05D 16/00 |

**B29C 49/80**

Testing, e.g. for leaks

**Definition statement**

This place covers:

- DE102004061230

---

DE 10 2004 061 230 A1 2006.07.06

Anhängende Zeichnungen

![Diagram](image)
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Investigating fluid-tightness of structures | G01M 3/02 |

B29C 51/00

Shaping by thermoforming (i.e. shaping sheets or sheet like preforms after heating), e.g. shaping sheets in matched moulds or by deep-drawing; Apparatus therefor (blow moulding of tubular preforms B29C 49/00, deforming of tubular or hollow preforms B29C 67/0014)

Definition statement

This place covers:
- shaping of materials in a plastic state by thermoforming
- simulation of thermoforming
- honeycomb structures sheets which are thermoformed with thermoplastic sheets surrounding it as long as the thermoplastic sheets are plastically deformed,
- plates or sheets which are clamped in such a way that they can at least partially slide into the mould when thermoformed

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Surface shaping | B29C 59/00 |
| Cold deforming of thermoplastics material | B29C 67/0029 |
| Self-reinforcing plastics | B29C 70/04 |
| Metal deep-drawing | B21D 22/00 |
| Packaging individual articles in containers or receptacles whereby the machines incorporate means for making the containers | B65B 3/022 |
| Blister packaging | B65B 9/042 |
| Blister packages | B65D 81/03 |

Special rules of classification

- For articles and materials, as much as possible additional classification by adding the Indexing Codes of B29K and B29L is recommended.

- If more then 4 different thermoplastic materials are described in the disclosure then the Indexing Code B29K 2101/12 should be allocated. In addition only up to 4 of the disclosed uncommon thermoplastic materials are classified (common thermoplastics for thermoforming are PET, PE, PP) by allocating the appropriate Indexing Code as provided in B29K 2001/00 - B29K 2101/00.

- Inventive and additional information disclosed in documents to be classified should be identified by allocation the appropriate classification codes of B29C 51/00 - B29C 51/46. In particular attention
should be paid to the so called break down Indexing Codes, which are only present at additional information level, but should be allocated if disclosed in the document to be classified.

- If during thermoforming a vacuum, a vacuum and pressure or a pressure is used then one or both of the following classification codes should additionally be allocated: B29C 2791/006 and/or B29C 2791/007.

**B29C 51/002**

{characterised by the choice of material}

**Definition statement**

This place covers:

- Thermoforming processes, whereby their disclosure focuses on the materials or material parameters

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Compositions of macromolecular compounds in general |
| C08L 1/00 - C08L 101/10 |

**Special rules of classification**

If reinforcing material is comprised in the material to be thermoformed, then the following Indexing Codes should additionally be allocated: B29K 2201/00 - B29K 2313/02

**B29C 51/004**

{Textile or other fibrous material made from plastics fibres (combined with plastic layers B29C 51/145; compression moulding of reinforced plastic articles in matched moulds B29C 70/46; using pressure difference B29C 70/44)}

**Definition statement**

This place covers:

- Thermoforming of fabrics or textiles made of thermoplastic material. Fabrics or textiles can be woven or non woven.

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Shaping composites</th>
<th>B29C 70/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reinforcing plastics</td>
<td>B29C 70/04</td>
</tr>
<tr>
<td>Helmets</td>
<td>B29L 2031/48</td>
</tr>
<tr>
<td>Brassieres</td>
<td>B29L 2031/4885</td>
</tr>
<tr>
<td>Non-woven fabrics formed wholly or mainly of staple fibres or like relatively short fibres; Making three- dimensional articles by consolidation</td>
<td>D04H 1/005</td>
</tr>
<tr>
<td>Processes for the fixation or treatment of textile materials in three-dimensional forms</td>
<td>D06M 23/14</td>
</tr>
</tbody>
</table>
B29C 51/006
{for making articles having hollow walls}

Definition statement

This place covers:
-US2003026929

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hollow walled articles

| B29L 2024/00 |
B29C 51/008
{without using a mould, e.g. ballooning (as prestretching step B29C 51/06)}

Definition statement
This place covers:
- EP2226181

Fig. 1

B29C 51/02
Combined thermoforming and manufacture of the preform

Definition statement
This place covers:
- EP2226181
B29C 51/04
Combined thermoforming and prestretching, e.g. biaxial stretching

Definition statement
This place covers:

FIG. 3
**B29C 51/06**

using pressure difference {for prestretching}

**Definition statement**

*This place covers:*

---

**B29C 51/08**

Deep drawing or matched-mould forming, i.e. using mechanical means only

**Definition statement**

*This place covers:*

- moulds without counter mould

Top of Form
References

Limiting references

This place does not cover:

| Mechanical deformation of paper or cardboard, e.g. deep drawing techniques | B31F 1/00 |
B29C 51/082
{by shaping between complementary mould parts}

Definition statement

This place covers:
- WO9728942
B29C 51/085

{with at least one of the shaping surfaces being made of resilien material, e.g. rubber}

Definition statement

This place covers:

- FR2640545
B29C 51/087

{with at least one of the mould parts comprising independently movable sections (B29C 51/32 and B29C 51/34 take precedence)}

Definition statement

This place covers:

Fig. 3

Fig. 4
B29C 51/10
Forming by pressure difference, e.g. vacuum

Definition statement
This place covers:
B29C 51/105
{Twin sheet thermoforming, i.e. deforming two parallel opposing sheets or foils at the same time by using one common mould cavity and without welding them together during thermoforming (B29C 51/267, B29C 49/0047 take precedence)}

Definition statement
This place covers:
- thermoforming processes, whereby two sheets are deformed at the same time by pressure or vacuum in one combined mould cavity, but they are not welded together either before or during the thermoforming operation

B29C 51/12
of articles having inserts or reinforcements

Definition statement
This place covers:
JP61193830

Special rules of classification
When details of inserts are indicated, then it is highly desirable to allocate additionally the following Indexing Codes for additional information:

- B29K 2601/00 - B29K 2713/02

B29C 51/14
using multilayered preforms or sheets

References
Informative references
Attention is drawn to the following places, which may be of interest for search:
Layered products comprising thermoplastic sheets per se  B32B 27/00
Special rules of classification
- Thermoformed articles which are decorated with paint or sheets with a paint layer are additionally classified by adding the Indexing Code: B29L 2031/722

B29C 51/16
Lining or labelling

Definition statement
This place covers:
Thermoforming process whereby the lining must be heated and deformed during the lining operation.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classification Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lining or sheathing in general</td>
<td>B29C 63/00</td>
</tr>
<tr>
<td>Producing of labels</td>
<td>B31D 1/02</td>
</tr>
<tr>
<td>Labelling in general, other than flat surfaces</td>
<td>B65C 3/00</td>
</tr>
<tr>
<td>In mould labelled containers</td>
<td>B65D 23/0864</td>
</tr>
<tr>
<td>Labels in general e.g. for thermo adhesion</td>
<td>G09F 3/04</td>
</tr>
</tbody>
</table>
**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lining</td>
<td>Covering the whole outer and/or inner surface of articles with a heated thermoplastic sheet. The heated sheet is stretched and three dimensionally deformed.</td>
</tr>
<tr>
<td>Labelling</td>
<td>Connecting a label, which is for example on the inside of a mould cavity, to a heated preform or sheet while the preform or sheet is thermoformed. Often also called &quot;in mould labelling&quot;</td>
</tr>
</tbody>
</table>

**B29C 51/162**

*{of deep containers or boxes}*

**Definition statement**

*This place covers:*

---

---

---
B29C 51/165

{combined with the feeding or the shaping of the lining or the labels (by injection moulding B29C 45/14008, B29C 45/1418)}

Definition statement

This place covers:

- FR2613982

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Label feeding in general | B65C 9/08 |

FIG. 4
**B29C 51/167**
{of a continuous strip}

**Definition statement**
*This place covers:*
- US2482558

---

**B29C 51/20**

**having movable moulds or mould parts**

**Definition statement**
*This place covers:*
US4105736
B29C 51/22

rotatable about an axis

Definition statement

This place covers:
- FR2911537

B29C 51/225

{mounted on a vacuum drum (for surface shaping B29C 59/06)}

Definition statement

This place covers:
- Vacuum, pressure or match mould deforming as long as it is mounted on a drum
Component parts, details or accessories; Auxiliary operations

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handling of moulds between a mould store and a moulding machine in general</td>
<td>B29C 31/006</td>
</tr>
<tr>
<td>Mounting, exchanging or centering of moulds</td>
<td>B29C 33/30</td>
</tr>
<tr>
<td>Maintenance of moulds namely cleaning</td>
<td>B29C 33/72</td>
</tr>
<tr>
<td>Sterilisation in general</td>
<td>A61L 2/00</td>
</tr>
</tbody>
</table>
B29C 51/261

{Handling means, e.g. transfer means, feeding means (B29C 51/44 takes precedence)}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Handling sheet like materials in general | B65G 47/00 |

**B29C 51/262**

{Clamping means for the sheets, e.g. clamping frames}

**Definition statement**

This place covers:

- GB2324268
B29C 51/263
{characterised by using a particular environment, e.g. sterile}

Definition statement
This place covers:
  e.g.:
  - thermoforming in clean rooms
  - using an incompressible fluid for thermoforming

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Method or apparatus for sterilising in general | A61L 2/00 |
| Cleaning in general                          | B08B 1/00 |
B29C 51/28
for applying pressure through the wall of an inflated bag or diaphragm

Definition statement
This place covers:
- GB2049535

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Isostatic pressing in compression moulding |
|-----------------------------------------|---|
| B29C 43/10                              |   |
**B29C 51/30**

Moulds

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Moulds in general characterised by the material or the manufacturing process</th>
<th>B29C 33/38 - B29C 33/405</th>
</tr>
</thead>
</table>

**B29C 51/303**

{with sealing means or the like}

**Definition statement**

This place covers:
- US3238566

**B29C 51/306**

{with means for forming a rim (combined with cutting B29C 51/325; rim rolling per se B29C 53/34)}

**Definition statement**

This place covers:
Top of Form
B29C 51/34
for undercut articles

Definition statement
This place covers:

B29C 51/343
{having recessed undersurfaces}

Definition statement
This place covers:
B29C 51/346
{specially adapted to facilitate the destacking of nestable containers}

Definition statement
This place covers:

B29C 51/36
specially adapted for vacuum forming {, Manufacture thereof}

Definition statement
This place covers:
**B29C 51/365**  
{Porous moulds}  

**Definition statement**  
*This place covers:*  
- Microporous or sintered moulds

---

**B29C 51/38**  
Opening, closing or clamping means  

**Definition statement**  
*This place covers:*
B29C 51/38 (continued)

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Opening, closing or clamping of moulds in general | B29C 33/20 - B29C 33/28 |

B29C 51/40

Venting means

Definition statement

This place covers:

- DE29908024U

![Diagram of venting means]

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Venting means for moulds in general | B29C 33/10 |

B29C 51/42

Heating or cooling

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Heating, cooling or curing in general | B29C 35/00 |
Special rules of classification

When details of the heating or cooling means are indicated, then it is highly desirable to allocate additionally the following corresponding Indexing Codes for additional information:

- B29C 35/02, B29C 35/04 - B29C 2035/0883
- B29C 35/16, B29C 2035/1616 - B29C 2035/1691

Synonyms and Keywords

*In patent documents, the following words/expressions are often used as synonyms:*

- "glass transition temperature", "Tg" and "vitreous transition temperature"

**B29C 51/421**

{of preforms, specially adapted for thermoforming (preheating sheets in general B29B 13/023; B29C 51/427 takes precedence)}

**Definition statement**

*This place covers:*

![Diagram](image-url)
B29C 51/422

{to produce a temperature differential (B29C 51/426 takes precedence)}

Definition statement

This place covers:
B29C 51/423

{through the thickness of the preform}

Definition statement

This place covers:

- WO2005007386

B29C 51/424

{using a heated fluid}

Definition statement

This place covers:

- WO2005007386
B29C 51/425
{using movable heating devices}

Definition statement
This place covers:

B29C 51/427
{Cooling of the material with a fluid blast}

Definition statement
This place covers:
**B29C 51/428**

{of moulds or mould parts}

**Definition statement**

*This place covers:*

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Heating or cooling of moulds in general | B29C 33/02 - B29C 33/08 |

**Special rules of classification**

- If the heating or cooling system applied in the thermoforming mould is of general interest, then additional classification in the general groups B29C 33/02 - B29C 33/08 is recommended.
**B29C 51/44**

Removing or ejecting moulded articles

**Definition statement**

This place covers:

Contains also stacking of articles

---

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Moulds with means for to facilitate the removal of articles</th>
<th>B29C 33/44</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stacking of nested articles</td>
<td>B65G 57/165</td>
</tr>
</tbody>
</table>
B29C 51/445
{from a support after moulding, e.g. by cutting}

Definition statement
This place covers:

B29C 53/00
Shaping by bending, folding, twisting, straightening or flattening; Apparatus therefor (B29C 61/10 takes precedence)

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lining or sheathing by winding sheet or web-like material helically</td>
<td>B29C 63/08</td>
</tr>
<tr>
<td>Lining or sheathing by winding sheet or web-like material spirally</td>
<td>B29C 63/12</td>
</tr>
<tr>
<td>Covering or wrapping cores by winding webs, tapes or filamentary material</td>
<td>B65H 81/00</td>
</tr>
</tbody>
</table>

B29C 53/18
of plates or sheets

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus for taking-out curl from webs</td>
<td>B65H 23/34</td>
</tr>
</tbody>
</table>

B29C 53/56
Winding and joining, e.g. winding spirally {(winding in general B65H)}

Glossary of terms
In this place, the following terms or expressions are used with the meaning indicated:

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirally</td>
<td>the successive turns are completely overlapping each other</td>
</tr>
</tbody>
</table>
B29C 55/00
Shaping by stretching, e.g. drawing through a die; Apparatus therefor (B29C 61/08 takes precedence)

Definition statement

This place covers:

Documents describing shaping by stretching, drawing, orienting polymeric articles like films, sheets, webs, tapes, ribbons, bands, strips, slabs, plates, plaques, boards, tubes, hoses etc.

The subgroups define the mechanical and geometrical ways in which stretching is performed.

References

Limiting references

This place does not cover:

Manufacture of films or sheets characterised by the chemical composition C08J 5/18
Stretching of fibres, filaments, threads and the like and of textile fabrics D01D, D06C

Informative references

Attention is drawn to the following places, which may be of interest for search:

Membranes produced by stretching B01D 67/0025
Producing films characterised by special physical or application properties (e.g. translucent films for light diffusion) B29D 7/01
Film laminates B32B 27/00
Stretch wrapping B65B 11/00

B29C 57/00
Shaping of tube ends, e.g. flanging, belling or closing; Apparatus therefor {, e.g. collapsible mandrels}

References

Limiting references

This place does not cover:

Shaping a tube locally and then cutting in the deformed area, so that two tubes with shaped ends are obtained B29C 67/0014

Informative references

Attention is drawn to the following places, which may be of interest for search:

Forming the tip of catheters A61M 25/001
Altering the diameter of tube ends B21D 41/00
### B29C 59/00

**Surface shaping {of articles}, e.g. embossing; Apparatus therefor {(in-mould printing B29C 37/0025; by using liquids B29C 71/0009; by using gases without chemical reaction B29C 71/009; for decorating in general B44; abrasive blasting B24C; chemical aspects C08J 7/00)}**

#### References

**Limiting references**

*This place does not cover:*

| Photomechanical, e.g. photolithographic, production of textured or patterned surfaces, e.g. printing surfaces, lithographic processes using patterning methods other than those involving the exposure to radiation, e.g. by stamping | G03F 7/0002 |

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Moulding articles characterized by the shape of the surface | B29C 37/0053 |
| Shapping composites, comprising fillers only, the filler influencing the surface characteristics of the material, e.g. by concentrating near the surface or by incorporating in the surface by force | B29C 70/64 |
| Absorbent pads, characterised by the outer layer being three-dimensional, e.g. embossed, textured | A61F 13/51476 |
| Producing rollers or cylinders having an axial length of several times the diameter, e.g. for embossing, pressing or printing | B29D 99/0035 |
| Basic electric elements such as spark gaps; overvoltage arresters using spark gaps; sparking plugs; corona devices | H01T |
| Plasma technique | H05H |

### B29C 59/002

**{Component parts, details or accessories; Auxiliary operations}**

#### References

**Limiting references**

*This place does not cover:*

| Incorporation of release agents in the material to be embossed | B29C 59/005 |

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Using lubricants during embossing | B29C 2037/92 |
B29C 59/005

{characterised by the choice of material}

**Definition statement**

*This place covers:*

incorporation of release agents in the material to be embossed

B29C 59/007

{Forming single grooves or ribs, e.g. tear lines, weak spots (by moulding B29C 37/0057; folding lines B29C 53/06; in metal articles B21D 17/00; by cutting B26D 3/08)}

**Definition statement**

*This place covers:*
## References

### Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working by laser beam, removal material, plastics</td>
<td>B23K 26/402</td>
</tr>
<tr>
<td>Cutting work, making a superficial cut in the surface of the work without removal of material, e.g. scoring, incising</td>
<td>B26D 3/085</td>
</tr>
</tbody>
</table>

### Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moulding articles characterised by the shape of the surface; moulding single grooves or ribs, e.g. tear lines</td>
<td>B29C 37/0057</td>
</tr>
<tr>
<td>Vehicles, arrangements for storing air bag modules, characterised by a tear line for defining a deployment opening</td>
<td>B60R 21/2165</td>
</tr>
<tr>
<td>Packages comprising tear-lines provided in a wall portion</td>
<td>B65D 75/5827</td>
</tr>
</tbody>
</table>
B29C 59/02

by mechanical means, e.g. pressing (B29C 59/007 takes precedence; embossing expanded porous articles B29C 44/5627)

Definition statement

This place covers:
References

Limiting references

This place does not cover:

| Apparatus or machines for carrying out printing operations with other operations, with embossing | B41F 19/02 |
| Inking and printing with a printer’s forme combined with embossing | B41M 1/24 |
| Machines or apparatus for embossing decorations or marks, dies | B44B 5/026 |
| Machines or apparatus for embossing decorations or marks, heated dies | B44B 5/028 |
| Artists’ hand tool for embossing | B44B 11/04 |
### Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moulds or cores characterized by the shape of the moulding surface, e.g.</td>
<td>B29C 33/42</td>
</tr>
<tr>
<td>ribs, grooves</td>
<td></td>
</tr>
<tr>
<td>Shaping by casting, making articles of definite length characterised by the</td>
<td>B29C 39/026</td>
</tr>
<tr>
<td>shape of the surface</td>
<td></td>
</tr>
<tr>
<td>Compression moulding of article of definite length characterised by the</td>
<td>B29C 43/021</td>
</tr>
<tr>
<td>shape of the surface</td>
<td></td>
</tr>
<tr>
<td>Shaping by swelling, foaming, after-treatment of articles, by mechanical</td>
<td>B29C 44/5627</td>
</tr>
<tr>
<td>deformation, e.g. embossing</td>
<td></td>
</tr>
<tr>
<td>Injection moulding, mould cavity walls provided with means for marking or</td>
<td>B29C 45/372</td>
</tr>
<tr>
<td>patterning</td>
<td></td>
</tr>
<tr>
<td>Blow moulding moulds having decorating or printing means</td>
<td>B29C 49/52</td>
</tr>
<tr>
<td>Processes for manufacturing semi-permeable membranes; after-treatment of</td>
<td>B01D 67/0086</td>
</tr>
<tr>
<td>organic or inorganic membranes; mechanical after-treatment</td>
<td></td>
</tr>
<tr>
<td>Mechanical deformation of paper or cardboard, embossing</td>
<td>B31F 1/07</td>
</tr>
</tbody>
</table>
B29C 59/021
(of profiled articles, e.g. hollow or tubular articles, beams)

Definition statement

This place covers:

1. Apply the pattern to a hard mold (mandrel)

   Patterned hard mould, cut to circumference of tube inner diameter

   Thermoplastic tube

   Self Mold + tube

2. Roll press tubing to emboss pattern using a hard core mandrel

   Tubing with uncurled thermocast

   Pour uncured thermocasting polymer loosely

   Heat to embossing temperature for specified duration

   Remove cured thermocast polymer and self mold

Figure 7
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Extrusion moulding, producing hollow articles characterised by the shape of the surface, e.g. rough, irregular

B29C 48/002
B29C 59/022

{characterised by the disposition or the configuration, e.g. dimensions, of the embossments or the shaping tools therefor}

Definition statement

This place covers:
### References

#### Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>References</th>
<th>CPC code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus or processes specially adapted for the manufacture of record carriers, preparing and using a stamper, e.g. pressing or injection moulding substrates</td>
<td>G11B 7/263</td>
</tr>
</tbody>
</table>

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>References</th>
<th>CPC code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus or processes for manufacturing absorbent pads, mechanical treatment of webs, e.g. for giving them a fibre like appearance, e.g. by embossing</td>
<td>A61F 13/15731</td>
</tr>
<tr>
<td>Methods preventing deposition of fouling or of dust, by giving articles subject to fouling a special shape or arrangement (e.g. lotus effect)</td>
<td>B08B 17/06</td>
</tr>
<tr>
<td>Producing optical elements, e.g. lenses, prisms; optical laminates</td>
<td>B29D 11/0073</td>
</tr>
<tr>
<td>Producing carriers of records containing fine grooves or impressions, producing optically read record carriers, e.g. optical discs</td>
<td>B29D 17/007</td>
</tr>
<tr>
<td>Curable composition for imprints</td>
<td>C08F 2/48</td>
</tr>
<tr>
<td>Holographic processes or apparatus</td>
<td>G03H 1/00</td>
</tr>
</tbody>
</table>
B29C 59/025

{Fibrous surfaces with piles or similar fibres substantially perpendicular to the surface}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression moulding of articles of indefinite length, characterised by the shape of the surface</td>
<td>B29C 43/222</td>
</tr>
<tr>
<td>Fasteners of the touch-and-close type; making such fasteners made integrally of plastics, obtained by moulding processes</td>
<td>A44B 18/0049</td>
</tr>
<tr>
<td>Absorbent pads, topsheet characterised by its apertures, e.g. perforations</td>
<td>A61F 13/512</td>
</tr>
</tbody>
</table>
B29C 59/026
(of layered or coated substantially flat surfaces)

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Floor covering on textile basis, e.g. PVC coatings on fibrous felt, characterised by their relief structure obtained by mechanical embossing

D06N 7/001

B29C 59/04

using rollers or endless belts

Definition statement

This place covers:
## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression moulding of articles of indefinite length, characterised by the shape of the surface</td>
<td>B29C 43/222</td>
</tr>
<tr>
<td>Fasteners of the touch-and-close type; making such fasteners made integrally of plastics, obtained by moulding processes</td>
<td>A44B 18/0049</td>
</tr>
<tr>
<td>Absorbent pads, topsheet characterised by its apertures, e.g. perforations</td>
<td>A61F 13/512</td>
</tr>
</tbody>
</table>
B29C 59/043
{for profiled articles}

Definition statement

This place covers:
B29C 59/046
{for layered or coated substantially flat surfaces}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Producing optical elements, e.g. lenses, prisms; optical laminates | B29D 11/0073 |
|Ancillary operations in connection with laminating processes, embossing | B32B 38/06 |
B29C 59/06
using vacuum drums {{for thermoforming B29C 51/225}}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Apparatus or processes for manufacturing absorbent pads, mechanical treatment of webs, e.g. for giving them a fibre like appearance, e.g. by embossing | A61F 13/15731 |
| Perforating by non-mechanical means, e.g. by fluid jet | B26F 1/26 |
B29C 59/08
by flame treatment {; using hot gases}

Definition statement
This place covers:
References

Limiting references

This place does not cover:

| Pretreatment of surfaces to which liquids or fluent materials are to be applied; by flame | B05D 3/08 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Inking and printing with a printer's forme; printing on plastics, using mechanical, physical or chemical means, e.g. corona discharge, etching or organic solvents, to improve ink retention | B41M 1/305 |

B29C 59/085

{of profiled articles, e.g. hollow or tubular articles}

Definition statement

This place covers:
B29C 59/10

by electric discharge treatment

Definition statement

This place covers:
## References

### Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretreatment of surfaces to which liquids or fluent materials are to be</td>
<td>B05D 3/14</td>
</tr>
<tr>
<td>applied; by electrical means</td>
<td></td>
</tr>
<tr>
<td>Inking and printing with a printer’s forme; printing on plastics, using</td>
<td>B41M 1/305</td>
</tr>
<tr>
<td>mechanical, physical or chemical means, e.g. corona discharge, etching</td>
<td></td>
</tr>
<tr>
<td>or organic solvents, to improve ink retention</td>
<td></td>
</tr>
</tbody>
</table>

### Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical treatment of fibres, threads, yarns, fabrics, of fibrous goods;</td>
<td>D06M 10/025</td>
</tr>
<tr>
<td>corona discharge, low temperature plasma</td>
<td></td>
</tr>
<tr>
<td>Devices providing for corona discharge</td>
<td>H01T 19/00</td>
</tr>
<tr>
<td>Devices providing for corona discharge, corona rings</td>
<td>H01T 19/02</td>
</tr>
<tr>
<td>Devices providing for corona discharge, having pointed electrodes</td>
<td>H01T 19/04</td>
</tr>
</tbody>
</table>
B29C 59/103
{of profiled articles, e.g. hollow or tubular articles}

Definition statement

This place covers:
B29C 59/106
{the electrodes being placed on the same side of the material to be treated}

Definition statement

This place covers:
B29C 59/12
in an environment other than air

Definition statement

This place covers:
B29C 59/14
by plasma treatment {(plasma tubes per se H01J)}

Definition statement

This place covers:
References

Limiting references

This place does not cover:

Processes, other than flocking for applying particular liquids or other fluent materials; plasma deposition of organic layers  | B05D 1/62
Pretreatment of surfaces to which liquids or fluent materials are to be applied; plasma treatment, pretreatment of polymeric substrates  | B05D 3/144
Apparatus or processes for manufacturing printed circuits; etching the insulating substrate by plasma etching  | H05K 3/0041

Informative references

Attention is drawn to the following places, which may be of interest for search:

Processes for manufacturing semi-permeable membranes; after-treatment of organic or inorganic membranes; with wave-energy, particle radiation or plasma  | B01D 67/009
Physical treatment of fibres, threads, yarns, fabrics, of fibrous goods; corona discharge, low temperature plasma  | D06M 10/025
B29C 59/142

(of profiled articles, e.g. hollow or tubular articles)

Definition statement

This place covers:

Fig. 3

Fig. 4

Vacuum chamber

Electrode

RF source

Light source (such as high pressure mercury lamp and Xenon lamp)

Temperature controlled bath

Fiber optics

Fig. 1

Fig. 2

Heater gas

Flexon coil

Heater gas

Electrode

Electrode

U.S. Patent

U.S. Patent

5,977,456

5,977,456

FIG. 1

FIG. 2

FIG. 3

FIG. 4

TO ELECTRIC FIELD SOURCE OF FIRST SIDE

TO ELECTRIC FIELD SOURCE OF FIRST SIDE

TO ELECTRIC FIELD SOURCE OF FIRST SIDE

TO FLOATING PLANE SOURCE OF FLOATING SIDE

TO ELECTRIC FIELD SOURCE OF FLOATING SIDE
B29C 59/16

by wave energy or particle radiation {, e.g. infra-red heating (B29C 59/007 takes precedence)}

Definition statement

This place covers:
FIG. 6

hydrolyzed fluoropolymer

irradiation through mask

resulting pattern

O₂ or O₃

mask

sample

FIG. 6
References

Limiting references

This place does not cover:

| Pretreatment of surfaces to which liquids or fluent materials are to be applied; by exposure to radiation, using U.V., pretreatment of polymeric substrates | B05D 3/063 |
| Pretreatment of surfaces to which liquids or fluent materials are to be applied; by exposure to radiation, using U.V., after-treatment | B05D 3/065 |
| Pretreatment of surfaces to which liquids or fluent materials are to be applied; by exposure to radiation, using ionising radiations (gamma, X, electrons) | B05D 3/068 |
| Working by laser beam, removal material, plastics | B23K 26/402 |
| Duplicating or marking methods; thermography; marking of plastic artifacts, e.g. with laser | B41M 5/267 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Coating by vacuum evaporation; pre-treatment of the material to be coated; cleaning or etching treatment by means of bombardment with energetic particles or radiation | C23C 14/022 |
B29C 59/165
{of profiled articles, e.g. hollow or tubular articles}

Definition statement

This place covers:

B29C 59/18
by liberation of internal stresses, e.g. plastic memory

Definition statement
This place covers:
Shaping by liberation of internal stresses; Making preforms having internal stresses; Apparatus therefor (for surface shaping B29C 59/18; for lining articles B29C 63/38; for joining preformed parts B29C 65/66; for packaging B65B 53/00; connecting arrangements or other fittings for plastics pipes using shrink-down material F16L 47/22, electrical connections insulated using heat shrinking insulating sleeves H01R 4/72; cable junctions protected by sleeves H02G 15/18)

Definition statement

This place covers:

Methods or apparatus for liberation of internal stresses, typically for heat-shrinking

Methods or apparatus for making preforms having internal stresses, typically heat-shrinkable articles

Heating devices specially designed for thermal shrinking.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping by liberation of internal stresses; thermal shrinking</td>
<td>B29C 61/02</td>
</tr>
</tbody>
</table>

B29C 61/00

Mechanical power produced by shape memory element

Shrinkage connections
Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "shrink", "recover" and "shape memory"

B29C 63/00

Lining or sheathing, i.e. applying preformed layers or sheathings of plastics; Apparatus therefor (B29C 73/00 takes precedence; by blowing B29C 49/00; by thermoforming B29C 51/00)

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Extrusion coating</th>
<th>B29C 48/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applying liquid or other fluent coatings</td>
<td>B05D</td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Inserting a flexible liner inside a pipe for covering leaks | F16L 55/165 |

B29C 64/00

Additive manufacturing, i.e. manufacturing of three-dimensional [3D] objects by additive deposition, additive agglomeration or additive layering, e.g. by 3D printing, stereolithography or selective laser sintering

Definition statement

This place covers:

Technologies involving the use or application of processes or apparatus that produce three-dimensionally shaped structures by selectively depositing successive layers of material one upon another. In particular it covers processes, apparatus and other aspects of additive manufacturing, i.e., making, repairing, or modifying articles of manufacture by the selective application of multiple layers of material. The applied layers may be applied directly, as in a printing process, or by selective solidification of material onto a substrate or previously developed layers, for example, by selective sintering of a particulate.

Relationships with other classification places

This group B29C 64/00 covers additive manufacturing of plastics or materials in a plastic state, not otherwise provided for.

The subclass B33Y covers additive manufacturing, irrespective of the process or material used. Furthermore, the subclass B33Y is for obligatory supplementary classification of subject matter containing an aspect of additive manufacturing already classified as such in other classification places.
## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation of food or foodstuffs</td>
<td>A23L 5/00</td>
</tr>
<tr>
<td>Preparation of cocoa products</td>
<td>A23G</td>
</tr>
<tr>
<td>Making of dental prostheses</td>
<td>A61C 13/00</td>
</tr>
<tr>
<td>Coating apparatus, in general</td>
<td>B05C</td>
</tr>
<tr>
<td>Coating processes, in general</td>
<td>B05D</td>
</tr>
<tr>
<td>Manufacture of workpieces or articles from metallic powder characterised by the manner of compacting or sintering</td>
<td>B22F 3/00</td>
</tr>
<tr>
<td>Milling, in general</td>
<td>B23C</td>
</tr>
<tr>
<td>Build-up welding</td>
<td>B23K 9/04, B23K 26/342</td>
</tr>
<tr>
<td>Producing shaped articles from ceramic or cementitious material</td>
<td>B28B 1/00</td>
</tr>
<tr>
<td>Shaping by coating a mould, core or other substrate, i.e. by depositing material and stripping-off the shaped article</td>
<td>B29C 41/00</td>
</tr>
<tr>
<td>Moulding by agglomeration</td>
<td>B29C 67/02</td>
</tr>
<tr>
<td>Methods or apparatus for laminating, e.g. by curing or by ultrasonic bonding</td>
<td>B32B 37/00</td>
</tr>
<tr>
<td>Forme preparation</td>
<td>B41C 1/00</td>
</tr>
<tr>
<td>Typewriters or selective printers</td>
<td>B41J 2/00</td>
</tr>
<tr>
<td>Superimposing layers to produce ornamental structures</td>
<td>B44C 3/02</td>
</tr>
<tr>
<td>Braille printing</td>
<td>B41M 3/16</td>
</tr>
<tr>
<td>Sintering of ceramic materials</td>
<td>C04B 35/64</td>
</tr>
<tr>
<td>Culture of undifferentiated human, animal or plant cells</td>
<td>C12N 5/00</td>
</tr>
<tr>
<td>Coating by vacuum evaporation, by sputtering or by ion implantation of the coating forming material</td>
<td>C23C 14/00</td>
</tr>
<tr>
<td>Photosensitive materials</td>
<td>G03C, G03F 7/004</td>
</tr>
<tr>
<td>Photomechanical production of patterned surfaces</td>
<td>G03F 7/00</td>
</tr>
<tr>
<td>Electrographic processes using a charge pattern</td>
<td>G03G 13/00</td>
</tr>
<tr>
<td>Manufacture of semiconductor or otherwise not provided for electric solid state devices</td>
<td>H01L 21/00</td>
</tr>
<tr>
<td>Programme-control systems for surface or curve machining, making 3D objects, e.g. desktop manufacturing</td>
<td>G05B 19/4099</td>
</tr>
<tr>
<td>General purpose image data processing</td>
<td>G06T 1/00</td>
</tr>
<tr>
<td>Image enhancement for 2D or 3D images</td>
<td>G06T 5/00</td>
</tr>
<tr>
<td>Image analysis for 2D or 3D images</td>
<td>G06T 7/00</td>
</tr>
<tr>
<td>Image coding, e.g. from bit-mapped to non bit-mapped</td>
<td>G06T 9/00</td>
</tr>
<tr>
<td>3D [Three-dimensional] image rendering</td>
<td>G06T 15/00</td>
</tr>
<tr>
<td>3D [Three-dimensional] modelling, e.g. data description of 3D objects</td>
<td>G06T 17/00</td>
</tr>
<tr>
<td>Manipulating 3D models or images for computer graphics</td>
<td>G06T 19/00</td>
</tr>
<tr>
<td>Geography, e.g. relief models</td>
<td>G09B 25/06</td>
</tr>
</tbody>
</table>
Electron-beam or ion-beam tubes for localised application of thin layers on objects  
Manufacturing printed circuits by printing of conductive patterns

Glossary of terms
In this place, the following terms or expressions are used with the meaning indicated:

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D printing</td>
<td>Additive manufacturing where the buildup of successive layers of material includes the use of a printer-like device having a motor controlled head for dispensing materials that form the layers.</td>
</tr>
<tr>
<td>Stereolithography</td>
<td>Additive manufacturing technique where the successive layers of material are formed by selectively hardening regions of polymeric material successively applied to the structure, typically by the use of laser light.</td>
</tr>
</tbody>
</table>

Synonyms and Keywords
In patent documents, the following abbreviations are often used:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLS</td>
<td>Selective laser sintering</td>
</tr>
<tr>
<td>DTM</td>
<td>Desktop manufacturing</td>
</tr>
<tr>
<td>LOM</td>
<td>Laminated Object Modelling</td>
</tr>
<tr>
<td>3DP, 3D-printing</td>
<td>Three-dimensional printing</td>
</tr>
<tr>
<td>SFF</td>
<td>Solid Freeform Fabrication</td>
</tr>
<tr>
<td>FDM</td>
<td>Fused Deposition Modelling</td>
</tr>
<tr>
<td>3DD</td>
<td>Three-dimensional deposition</td>
</tr>
<tr>
<td>SDM</td>
<td>Selective Deposition Modelling</td>
</tr>
<tr>
<td>LDM</td>
<td>Layered deposition modelling</td>
</tr>
<tr>
<td>3DM</td>
<td>Three-dimensional modelling</td>
</tr>
<tr>
<td>BPM</td>
<td>Ballistic Particle Modelling</td>
</tr>
</tbody>
</table>

B29C 64/00 (continued)

Processes of additive manufacturing

Relationships with other classification places
Additive manufacturing should obligatorily be further classified in subclass B33Y irrespective of the process or material used.
**B29C 64/106**

using only liquids or viscous materials, e.g. depositing a continuous bead of viscous material

**Definition statement**

*This place covers:*

e.g. extruding thermoplastic material.

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Dispensing heads</th>
<th>B29C 31/042</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moving heads for distributing liquid or viscous material into moulds</td>
<td>B29C 31/044</td>
</tr>
<tr>
<td>Moving along predetermined circuits or distributing according to patterns</td>
<td>B29C 31/045</td>
</tr>
</tbody>
</table>
**B29C 64/124**

using layers of liquid which are selectively solidified

**Definition statement**

*This place covers:*

![Diagram](attachment:image.png)
B29C 64/129

characterised by the energy source therefor, e.g. by global irradiation combined with a mask

Definition statement

This place covers:

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD</td>
<td>Liquid Crystal Display</td>
</tr>
<tr>
<td>MMD</td>
<td>Micromirror Devices</td>
</tr>
</tbody>
</table>
the energy source being concentrated, e.g. scanning lasers or focused light sources

Definition statement

This place covers:

EP 1 046 402 A1
B29C 64/141
using only solid materials

Definition statement
This place covers:
B29C 64/153

using layers of powder being selectively joined, e.g. by selective laser sintering or melting

Definition statement

This place covers:

DE 10 2005 022 308 A1 2006.11.23

Anhängende Zeichnungen

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Laser sintering of metallic powder</th>
<th>B22F 3/1055</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser sintering of ceramic powder</td>
<td>C04B 35/64 and C04B 35/65</td>
</tr>
</tbody>
</table>
**B29C 64/165**

using a combination of solid and fluid materials, e.g. a powder selectively bound by a liquid binder, catalyst, inhibitor or energy absorber

**Definition statement**

**This place covers:**

- Machines and systems for carrying out additive manufacturing methods to produce objects
- Subcombinations of machines that carry out additive manufacturing methods to produce objects
- Accessories for machines that carry out additive manufacturing methods. Accessories include things attachable to or used in conjunction with an additive manufacturing machine that have a direct association with the additive manufacturing machine, per se.

**Relationships with other classification places**

Auxiliary operations or equipment, e.g. for treating or handling the raw materials for additively manufacturing objects, are classified in **B29C 64/30**.

Additive manufacturing should obligatorily be further be classified in subclass **B33Y** irrespective of the process or material used.

---

**B29C 64/20**

Apparatus for additive manufacturing; Details thereof or accessories therefor

**Definition statement**

**This place covers:**

- Machines and systems for carrying out additive manufacturing methods to produce objects
- Subcombinations of machines that carry out additive manufacturing methods to produce objects
- Accessories for machines that carry out additive manufacturing methods. Accessories include things attachable to or used in conjunction with an additive manufacturing machine that have a direct association with the additive manufacturing machine, per se.
**B29C 64/30**

**Auxiliary operations or equipment**

**Definition statement**

>This place covers:

The handling or treating of materials used in an additive manufacturing process, or the subsequent treating or handling of objects produced by an additive manufacturing process. Also covered are ancillary components or process steps not directly involving the additive manufacturing process or apparatus, per se, such as cleaning raw materials used in the additive manufacturing process, or recycling residual material from the manufacturing process.

**Relationships with other classification places**

Additive manufacturing should obligatorily be further be classified in subclass B33Y irrespective of the process or material used.

**B29C 64/35**

**Cleaning**

**Definition statement**

>This place covers:

---

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Deburring or deflashing</th>
<th>B29C 37/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface shaping</td>
<td>B29C 59/00</td>
</tr>
</tbody>
</table>
### B29C 64/386

**Data acquisition or data processing for additive manufacturing**

**Definition statement**

*This place covers:*

- Data processing aspects related to an object to be manufactured in an additive manufacturing process, specially adapted for processing of plastics or materials in a plastic state, not otherwise provided for, for example, combining together data from different sources to produce composite production data for said object to be made.

- Acquiring, sending, or receiving data that will be used in additive manufacturing, either internal or external to the additive manufacturing apparatus, specially adapted for processing of plastics or materials in a plastic state, not otherwise provided for.
Illustrative example of subject matter classified in this group:

**Relationships with other classification places**

Additive manufacturing should obligatorily be further be classified in subclass B33Y irrespective of the process or material used.

**B29C 64/393**

for controlling or regulating additive manufacturing processes

**Definition statement**

*This place covers:*

Data processing specially adapted for managing the additive manufacturing process performed by one or more additive manufacturing apparatuses, specially adapted for processing of plastics or materials in a plastic state, not otherwise provided for.
Illustrative example of subject matter classified in this group:

**Relationships with other classification places**

Additive manufacturing should obligatorily be further be classified in subclass B33Y irrespective of the process or material used.
B29C 64/40

Structures for supporting 3D objects during manufacture and intended to be sacrificed after completion thereof

Definition statement

This place covers:

![Image of a 3D object support structure]

B29C 65/00

Joining (or sealing) of preformed parts {e.g. welding of plastics materials}; Apparatus therefor {{general aspects of processes or apparatus for joining preformed parts B29C 66/00; using porous material formed by internal pressure generated therein for joining preformed parts B29C 44/1228, B29C 44/326}}

Definition statement

This place covers:

Joining by heating (cf. B29C 65/02 and subgroups);

Joining using adhesives (cf. B29C 65/48 and subgroups);

Joining using mechanical means (cf. B29C 65/56 and subgroups);

Joining and severing (cf. B29C 65/74 and subgroups);

Means for handling the parts to be joined (cf. B29C 65/78 and subgroups);

Testing the joints obtained by processes as foreseen in this main group (cf. B29C 65/82 and subgroups).
References

Limiting references

This place does not cover:

| General aspects of processes or apparatus for joining preformed parts | B29C 66/00 |

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

| Devices or methods of sealing or securing package folds or closures | B65B 51/00 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Manufacture of lost patterns, made from expanded plastic materials, by assembling preformed parts | B22C 7/026 |
| Making preforms by assembling performed material | B29B 11/04 |
| Making of boxes, cartons, envelopes, or bags | B31B |
| Assembling of microstructural devices by bonding of two components | B81C 3/00 |
| Chemical aspects of bonding of a preformed macromolecular material to the same or other solid material | C08J 5/12 |
| Adhesive processes in general | C09J 5/00 |
| Devices for fastening or securing constructional elements or machine parts together | F16B |
| Splicing of light guides | G02B 6/255 |

Special rules of classification

Patent literature (e.g. patent applications, patent specifications):

Claims / claimed subject-matter:

Independent claims: compulsory invention information;

Dependent claims: at least compulsory additional information (or compulsory invention information if appropriate).

Figures - depicted subject-matter: at least compulsory additional information (or compulsory invention information if appropriate).

Description - described subject-matter: at least desirable additional (or compulsory invention information if appropriate).

Tables: at least compulsory additional information.

Non-patent literature (e.g. scientific non-patent publications):

Figures - depicted subject-matter: compulsory invention information;

Abstract: compulsory invention information;
Description: at least desirable additional information (or compulsory invention information if appropriate).

N.B.: in this main group, it is compulsory that any disclosed aspect relating to the invention is identified by the corresponding classification code(s).

**B29C 65/004**

{Cold joining}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Cold vulcanisation | B29C 35/18 |

**B29C 65/008**

{making use of electrostatic charges (holding means using electrostatic forces to hold at least one of the parts to be joined B29C 65/7852)}

**Definition statement**

This place covers:

Example 1, from

DE1104679:

![Diagram](image)
B29C 65/02
by heating, with or without pressure

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Attachments of seat coverings by thermal welding | B60N 2/5866 |
| Attachments of removable protective seat coverings by thermal welding | B60N 2/6072 |
| Closing containers or receptacles after filling, by applying separate preformed closures, e.g. lids, covers, securing said closures on said containers by heat-sealing | B65B 7/2878 |
| Securing ends of binding material by welding or heat-sealing | B65B 13/32 |
| Devices for, or methods of, sealing or securing package folds or closures, by applying or generating heat or pressure or combinations thereof | B65B 51/10 |
| Devices, e.g. jaws, for applying pressure and heat, specially adapted for producing longitudinal or transverse seams in package web or tubes, e.g. for subdividing filled tubes | B65B 51/30 |
| Chemical aspects of bonding of a preformed macromolecular material to the same or other solid material by heating | C08J 5/121 |
| Joining multiple sections together by welding, for assembling air intake systems | F02M 35/1036 |

B29C 65/04
Dielectric heating, e.g. high-frequency welding {, i.e. radio frequency welding of plastic materials having dielectric properties, e.g. PVC}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Curing by dielectric heating | B29C 35/12 |
| Non-woven fabrics formed from fleeces or layers composed of fibres by welding together the fibres by radio-frequency heating | D04H 1/554 |

B29C 65/06
using friction, e.g. spin welding {(non-plastics elements to plastic elements B29C 65/645)}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Heating or curing using friction | B29C 35/0255 |
| Friction welding of metals | B23K 20/12 |
B29C 65/0618

{Linear}

Definition statement

This place covers:
Example 1, from
XP001177273:

Example 2, from
EP2380726:

B29C 65/0627

{Angular, i.e. torsional (B29C 65/082 takes precedence)}

Definition statement

This place covers:
Example 1, from
EP2380726:

**FIG. 6**

**B29C 65/0636**

{Orbital}

**Definition statement**

*This place covers:*

Example 1, from

XP001177273:

**B29C 65/0672**

{Spin welding}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from JP10193461:

B29C 65/0681
{created by a tool}

Definition statement
This place covers:
Example 1, from
DE10238550:

![Diagram of welding tool](image)

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Friction stir welding of metals | B23K 20/122 |

**B29C 65/069**

{the welding tool cooperating with specially formed features of at least one of the parts to be joined, e.g. cooperating with holes or ribs of at least one of the parts to be joined}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from US2006255590:

**B29C 65/08**

using ultrasonic vibrations \{(non-plastics element to plastics elements B29C 65/645)\}

**Definition statement**

*This place covers:*

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Heating or curing using ultrasonic or sonic vibrations | B29C 35/0261 |
| Methods or apparatus for generating or transmitting mechanical vibrations of ultrasonic frequency | B06B |
| Ultrasonic welding of metals | B23K 20/10 |
| Attaching together paper or cardboard sheets, strips, or webs by ultrasonic vibrations | B31F 5/008 |
| Securing ends of binding material by ultrasonic welding | B65B 13/325 |
| Devices for, or methods of, sealing or securing package folds or closures by ultrasonic welding | B65B 51/225 |
| Methods of, or devices for, interconnecting successive lengths of filamentary material by welding using ultrasonic means | B65H 69/085 |
| Non-woven fabrics formed from fleeces or layers composed of fibres by welding together the fibres by ultrasonic heating | D04H 1/555 |

B29C 65/081

{having a component of vibration not perpendicular to the welding surface}

Definition statement

This place covers:

Example 1, from
Example 2, from DE1957216:

Example 3, from
DE3911634:

**B29C 65/082**

{Angular, i.e. torsional ultrasonic welding}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from
EP1930148:
**B29C 65/085**

{using a rotary sonotrode}

**Definition statement**

*This place covers:*

Example 1, from

JP11170404:

![Diagram](image1)

---

**B29C 65/086**

{using a rotary anvil}

**Definition statement**

*This place covers:*

Example 1, from

JP11170404:

![Diagram](image2)
**B29C 65/087**

{using both a rotary sonotrode and a rotary anvil}

**Definition statement**

*This place covers:*

Example 1, from

JP11170404:

![Diagram](image1)

**B29C 65/088**

{using several cooperating sonotrodes, i.e. interacting with each other, e.g. for realising the same joint}

**Definition statement**

*This place covers:*

Example 1, from

DE2251521:

![Diagram](image2)

Example 2, from
**B29C 65/10**

using hot gases {(e.g. combustion gases) or flames coming in contact with at least one of the parts to be joined}

**Definition statement**

This place covers:

Example 1, from

WO2004099488:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Heating or curing using gas or flames</th>
<th>B29C 35/045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soldering with the use of hot gas</td>
<td>B23K 1/00</td>
</tr>
<tr>
<td>Gas flame welding of metals</td>
<td>B23K 5/00</td>
</tr>
<tr>
<td>Device for, or methods of, sealing or securing package folds or closures by applying heat using fluids, e.g. hot-air jets</td>
<td>B65B 51/20</td>
</tr>
</tbody>
</table>

B29C 65/103

{direct heating both surfaces to be joined}

Definition statement

This place covers:

Example 1, from WO2004099488:

---

B29C 65/106

{using flames coming in contact with at least one of the parts to be joined}

Definition statement

This place covers:

Example 1, from
Definition statement

This place covers:
Example 1, from
DE29713474U:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Heating or curing by wave energy or particle radiation | B29C 35/08 |
Medical tube couplings for connecting tubes having sealed ends, both tube ends being sealed by meltable membranes pierced after connection by use of heat, e.g. using radiant energy

<table>
<thead>
<tr>
<th>CPC</th>
<th>B29C 65/1412</th>
</tr>
</thead>
<tbody>
<tr>
<td>A61M 39/143</td>
<td></td>
</tr>
</tbody>
</table>

Soldering by means of radiant energy

<table>
<thead>
<tr>
<th>CPC</th>
<th>B29C 65/1432</th>
</tr>
</thead>
<tbody>
<tr>
<td>B23K 1/005</td>
<td></td>
</tr>
</tbody>
</table>

Soldering by means of beams, e.g. E.B.

<table>
<thead>
<tr>
<th>CPC</th>
<th>B29C 65/1432</th>
</tr>
</thead>
<tbody>
<tr>
<td>B23K 1/0056</td>
<td></td>
</tr>
</tbody>
</table>

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>CPC</th>
<th>B29C 65/1412</th>
</tr>
</thead>
<tbody>
<tr>
<td>D04H 1/556</td>
<td></td>
</tr>
</tbody>
</table>

Non-woven fabrics formed from fleeces or layers composed of fibres by welding together the fibres by infrared heating

**B29C 65/1412**

{Infrared [IR] radiation}

**Definition statement**

This place covers:

Example 1, from

DE845564:

![Fig. 8](image)

Example 2, from
B29C 65/1435

{at least passing through one of the parts to be joined, i.e. transmission welding}

Definition statement

This place covers:

Example 1, from

GB2103147:
B29C 65/1438
{focusing the wave energy or particle radiation on the interface}

Definition statement

This place covers:
Example 1, from BE629609:

B29C 65/1441
{making use of a reflector on the opposite side, e.g. a polished mandrel or a mirror (pressing means reflective to electromagnetic radiation B29C 66/81268)}

Definition statement

This place covers:
Example 1, from
B29C 65/1445

{heating both sides of the joint}

**Definition statement**

*This place covers:*

Example 1, from
EP0415068:

Fig 3

K.Nr.2673/FIP

Example 2, from
DE938499:
B29C 65/1448
{radiating the edges of the parts to be joined, e.g. for curing a layer of adhesive placed between two flat parts to be joined, e.g. for making CDs or DVDs}

Definition statement
This place covers:
Example 1, from
JP11053778:

Example 2, from
JP63275052:

B29C 65/1451
{radiating the edges of holes or perforations}

Definition statement
This place covers:
Example 1, from
JP63275052:

Example 2, from
B29C 65/1464
{making use of several radiators}

Definition statement
This place covers:
Example 1, from
EP0415068
Example 2, from EP0510804:

**FIG. 1.**

Example 3, from EP1059344:
B29C 65/148
{placed at the interface}

Definition statement
This place covers:
Example 1, from
US5843265:

B29C 65/1483
{coated on the article}

Definition statement
This place covers:
Example 1, from
SU1502396:

**B29C 65/1487**

{making use of light guides (B29C 65/1687 takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from
JP3238185:

**B29C 65/1496**

{making use of masks (B29C 65/1696 takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from
References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Heating or curing by wave energy or particle radiation using transparent moulds provided with masks or diaphragms | B29C 35/0894 |

B29C 65/16
Laser beams

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Soldering by means of lasers | B23K 1/0056 |
| Bonding, e.g. welding, of materials in general, e.g. metals, by laser beam | B23K 26/20 |
| Lasers | H01S 3/00 |

B29C 65/1632
{direct heating the surfaces to be joined}

Definition statement
This place covers:
Example 1, from
Example 2, from JP50138066:

**B29C 65/1635**

{at least passing through one of the parts to be joined, i.e. laser transmission welding}

**Definition statement**

*This place covers:*

Example 1, from
DE19814298:

**FIG. 1**

**B29C 65/1638**

{focusing the laser beam on the interface}

**Definition statement**

*This place covers:*

Example 1, from

DE1479686:

**B29C 65/1641**

{making use of a reflector on the opposite side, e.g. a polished mandrel or a mirror (pressing means reflective to electromagnetic radiation [B29C 66/81268])}

**Definition statement**

*This place covers:*

Example 1, from
FR1576435:

**B29C 65/1645**

{heating both sides of the joint, e.g. by using two lasers or a split beam}

**Definition statement**

*This place covers:*

Example 1, from

DE2725463:
B29C 65/1661
{scanning repeatedly, e.g. quasi-simultaneous laser welding}

Definition statement
This place covers:
Example 1, from
XP000535361:

B29C 65/1664
{making use of several radiators}

Definition statement
This place covers:
Example 1, from
Example 2, from JP2004333946:

**B29C 65/1677**

{making use of an absorber or impact modifier}

**Definition statement**

*This place covers:*

Example 1, from
Definition statement

This place covers:
Example 1, from
WO2005021244:

Example 2, from
B29C 65/1683
{coated on the article}

Definition statement

This place covers:

Example 1, from
**B29C 65/1687**

{making use of light guides}

**Definition statement**

*This place covers:*

Example 1, from
**Definition statement**

This place covers:

Example 1, from

US5276303:
Example 2, from US6592239:

B29C 65/1693
{in the form of a cavity}

Definition statement
This place covers:
Example 1, from US5276303:
**B29C 65/1696**

{making use of masks}

**Definition statement**

*This place covers:*

Example 1, from US2006278617:

Example 2, from EP1864784:

---

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Heating or curing by wave energy or particle radiation using transparent moulds provided with masks or diaphragms | B29C 35/0894 |
**B29C 65/20**

with direct contact, e.g. using "mirror"

**Definition statement**

*This place covers:*

Example 1, from

JP2003080601:

![Diagram 4]

Example 2, from

![Diagram 5 and 6]
JP11325374:

B29C 65/2015

{being a single welding mirror comprising several separate heating surfaces in different planes, e.g. said heating surfaces having different temperatures}

Definition statement

*This place covers:*

Example 1, from
JP52168967U:

**B29C 65/2023**

{said welding mirror comprising several sectors}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from EP0667285:

Example 3, from
B29C 65/2038

{being a wire}

**Definition statement**

*This place covers:*

Example 1, from

US2546164:
B29C 65/2046

{using a welding mirror which also cuts the parts to be joined, e.g. for sterile welding}

Definition statement

This place covers:

Example 1, from

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Methods or apparatus for connecting medical tubes under sterile conditions, i.e. sterile docking | A61M 39/18 |

B29C 65/2061

{by sliding}

Definition statement

This place covers:

Example 1, from
JP1285328:

**B29C 65/2069**

{with an angle with respect to the plane comprising the parts to be joined}

**Definition statement**

*This place covers:*

Example 1, from
Definition statement

This place covers:

Example 1, from
B29C 65/2076 (continued)

DE3739656:

**Fig. 1**

**B29C 65/2084**

*by pivoting*

**Definition statement**

*This place covers:*

Example 1, from
DE2300626:

Example 2, from EP0453903:

Fig. 4

Fig 1
B29C 65/2092
{and involving the use of a facer}

Definition statement

This place covers:
Example 1, from
US5893961:

Example 2, from
**B29C 65/222**

*(comprising at least a single heated wire)*

**Definition statement**

*This place covers:*

Example 1, from
B29C 65/223
{comprising several heated wires}

Definition statement
This place covers:
Example 1, from
US2009250440:

FIG. 2

FIG. 8

Example 2, from
B29C 65/224

{being a resistive ribbon, a resistive band or a resistive strip}

Definition statement
This place covers:
Example 1, from
US2581977:

Example 2, from
B29C 65/226

{characterised by the cross-section of said heated wire, resistive ribbon, resistive band or resistive strip, e.g. being triangular}

Definition statement

This place covers:

Example 1, from
Example 2, from DE1268360:

**B29C 65/227**

{said cross-section being hollow}

**Definition statement**

*This place covers:*

Example 1, from
FR2105312:

Example 2, from US2621704:

B29C 65/228

{characterised by the means for electrically connecting the ends of said heated wire, resistive ribbon, resistive band or resistive strip}

Definition statement

This place covers:

Example 1, from
Example 2, from WO9214601:

B29C 65/229

{characterised by the means for tensioning said heated wire, resistive ribbon, resistive band or resistive strip (means for compensating for the thermal expansion of welding jaws in general B29C 66/8185)}

Definition statement

This place covers:

Example 1, from
B29C 65/229 (continued)

US3005402:

B29C 65/242

{the heat transfer being achieved by contact, i.e. a heated tool being brought into contact with the welding tool and afterwards withdrawn from it}

Definition statement

This place covers:
Example 1, from

EP0538636:
**B29C 65/245**

{the heat transfer being achieved contactless, e.g. by radiation (**B29C 65/32** takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from CH362216:

Example 2, from
B29C 65/65

Hot fluid

Definition statement
This place covers:
Example 1, from
FR1151122:
B29C 65/28
Flame or combustible material

Definition statement

This place covers:
Example 1, from
CH334038:

Example 2, from
DE2241657:
B29C 65/30
Electrical means \{(B29C 65/38 takes precedence)\}

Definition statement

This place covers:
Example 1, from FR1422754:

B29C 65/305
{involving the use of cartridge heaters}

Definition statement

This place covers:
Example 1, from
B29C 65/32

Induction

**Definition statement**

*This place covers:*

Example 1, from
B29C 65/34

using heated elements which remain in the joint, e.g. "verlorenes Schweisselement"

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Heating or curing using lost heating elements, i.e. heating means incorporated and remaining in the formed article | B29C 35/0272 |
| Multistep processes for producing pipe joints provided with electrical wiring | B29D 23/005 |
| Plastic pipe welded joints with an electrical resistance incorporated in the joint | F16L 47/03 |

B29C 65/342

{comprising at least a single wire, e.g. in the form of a winding}

Definition statement

This place covers:
Example 1, from
DE3411179:

Example 2, from JP6074386:

**B29C 65/3424**

{said at least a single wire having the form of a coil spring}

**Definition statement**

*This place covers:*

Example 1, from
B29C 65/3428

{said at least a single wire having a waveform, e.g. a sinusoidal form}

Definition statement

This place covers:

Example 1, from

FR2182587:

B29C 65/3432

{comprising several wires, e.g. in the form of several independent windings (B29C 65/3436, B29C 65/344 take precedence)}

Definition statement

This place covers:

Example 1, from
DE3411179:

**B29C 65/344**

*{being a woven or non-woven fabric or being a mesh}*

**Definition statement**

*This place covers:*

Example 1, from
B29C 65/344

{being a ribbon, band or strip}

Definition statement

This place covers:

Example 1, from
Definition statement

This place covers:
Example 1, from
B29C 65/3452
\{forming a sleeve, e.g. a wrap-around sleeve\}

**Definition statement**

*This place covers:*

Example 1, from

JP4308729:

Example 2, from
Example 3, from NL7004944:

**B29C 65/3464**

(characterised by the cross-section of said heated elements which remain in the joint or by the cross-section of their coating, e.g. being triangular)

**Definition statement**

This place covers:

Example 1, from
B29C 65/3468

{characterised by the means for supplying heat to said heated elements which remain in the join, e.g. special electrical connectors of windings (B29C 65/3668 takes precedence)}

Definition statement

This place covers:
Example 1, from
DE3411179:

Example 2, from
Example 3, from WO03029717:

Fig. 15B
B29C 65/36
heated by induction

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Devices for, or methods of, sealing or securing package folds or closures by induction welding | B65B 51/227 |
| Induction heating | H05B 6/02 |

B29C 65/3608

{comprising single particles, e.g. fillers or discontinuous fibre-reinforcements}

Definition statement

This place covers:

Example 1, from WO2010083942:

Example 2, from
US5124203:

B29C 65/362
{comprising at least a single wire, e.g. in the form of a winding}

**Definition statement**

This place covers:

Example 1, from
B29C 65/364
{being a woven or non-woven fabric or being a mesh}

Definition statement

This place covers:

Example 1, from
B29C 65/3656
{being a layer of a multilayer part to be joined, e.g. for joining plastic-metal laminates}

Definition statement
This place covers:
Example 1, from
JP5196187
**B29C 65/40**

Applying molten plastics, e.g. hot melt (using welding bar {combined with hot gases} B29C 65/12; by moulding B29C 65/70)

**Definition statement**

This place covers:

Example 1, from US3008862:

![Diagram](image)

**B29C 65/42**

between pre-assembled parts {(B29C 65/605 takes precedence)}

**Definition statement**

This place covers:

Example 1, from
B29C 65/44

Joining a heated non plastics element to a plastics element

Definition statement

This place covers:

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>US2007284040:</td>
<td>Vehicle superstructures characterised by the material thereof, characterised by combining metal and synthetic material, preformed metal and synthetic material elements being joined together</td>
</tr>
</tbody>
</table>

**B29C 65/46**

heated by induction

**Definition statement**

This place covers:

Example 1, from
US5771589:

Special rules of classification

The joining of metal-plastic laminates by induction is to be classified in B29C 65/3656, B29C 65/368 and B29C 66/72321

B29C 65/48

using adhesives {, i.e. using supplementary joining material; solvent bonding}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garment hems or seams made by gluing</td>
<td>A41D 27/245</td>
</tr>
<tr>
<td>Joining garments parts or blanks by gluing</td>
<td>A41H 43/04</td>
</tr>
<tr>
<td>Applying glue or adhesive peculiar to bookbinding by fusing, welding sheets together</td>
<td>B42C 9/0093</td>
</tr>
<tr>
<td>Closing containers or receptacles after filling, by applying separate preformed closures, e.g. lids, covers, securing said closures on said containers by gluing</td>
<td>B65B 7/2871</td>
</tr>
<tr>
<td>Securing ends of binding material by applying adhesive</td>
<td>B65B 13/32</td>
</tr>
<tr>
<td>Chemical aspects of bonding of preformed macromolecular material to the same or other solid material, e.g. using adhesives</td>
<td>C08J 5/12</td>
</tr>
<tr>
<td>Adhesive processes in general</td>
<td>C09J 5/00</td>
</tr>
<tr>
<td>Connecting constructional elements or machine parts by gluing</td>
<td>F16B 11/006</td>
</tr>
<tr>
<td>Connecting constructional elements or machine parts by gluing of tubular elements or rods in coaxial engagement</td>
<td>F16B 11/008</td>
</tr>
</tbody>
</table>
Special rules of classification

When classifying in this group, techniques for heating heat-activated adhesives are additionally classified in B29C 65/02 and subgroups

B29C 65/4825

{Pressure sensitive adhesives}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Adhesives in the form of films or foils, on paper or textile fabric, characterised by pressure-sensitive adhesive | C09J 7/21, C09J 7/38 |
| Adhesives in the form of films or foils, on carriers other than paper or textile fabrics, characterised by pressure-sensitive adhesive | C09J 7/22, C09J 7/38 |
| Adhesives in the form of films or foils, on carriers, characterised by pressure-sensitive adhesive | C09J 7/38 |

B29C 65/4835

{Heat curing adhesives}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Adhesives in the form of films or foils, on paper or textile fabric, characterised by heat-curable adhesive | C09J 7/21, C09J 7/35 |
| Adhesives in the form of films or foils, on carriers other than paper or textile fabrics, essentially based on heat-curable adhesive | C09J 7/22, C09J 7/35 |
| Adhesives in the form of films or foils, on carriers, essentially based on heat-curable adhesive | C09J 7/35 |

B29C 65/484

{Moisture curing adhesives}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Adhesive in the form of films or foils, on paper or textile fabrics, characterised by water-activable adhesive | C09J 7/21 |
B29C 65/4855
{characterised by their physical properties, e.g. being electrically-conductive}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Adhesives characterised by their physical nature, in general | C09J 9/00 |
| Electrically-conducting adhesives, in general               | C09J 9/02 |

B29C 65/486
{characterised by their physical form being non-liquid, e.g. in the form of granules or powders (B29C 65/50 takes precedence)}

Definition statement

This place covers:
Example 1, from

FIG. 1.

FIG. 2.

FIG. 3.
B29C 65/4865
{containing additives (C09J 11/00 and subgroups take precedence)}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Adhesive additives, in general | C09J 11/00 |

B29C 65/4875
{being spherical, e.g. particles or powders}

Definition statement
This place covers:
Example 1, from
US2010276065:

B29C 65/4885
{characterised by their composition being non-plastics}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Non-macromolecular adhesive additives, in general | C09J 11/02 |

B29C 65/4895
{Solvent bonding, i.e. the surfaces of the parts to be joined being treated with solvents, swelling or softening agents, without adhesives}

Definition statement
This place covers:
Example 1, from
WO2009125997:

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Bonding of a preformed macromolecular material using low molecular chemically inert solvents, swelling or softening agents | C08J 5/122 |
| Non-woven fabrics formed from fleeces or layers composed of fibres by welding together the fibres by applying solvents | D04H 1/552 |

B29C 65/50
using adhesive tape {, e.g. thermoplastic tape; using threads or the like (B29C 65/3444 takes precedence)}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Closing containers or receptacles after filling, by applying separate preformed closures, e.g. lids, covers, securing said closures on said containers by adhesive tape | B65B 7/2864 |
| Adhesives in the form of films or foils | C09J 7/00 |
B29C 65/5035
{being in thread form, i.e. in the form of a single filament, e.g. in the form of a single coated filament}

Definition statement

This place covers:
Example 1, from
JP1027928:

B29C 65/5042
{covering both elements to be joined}

Definition statement

This place covers:
Example 1, from
WO8404486:

Fig. 3

B29C 65/505
{and placed in a recess formed in the parts to be joined, e.g. in order to obtain a continuous surface}

Definition statement

This place covers:
Example 1, from
B29C 65/5057
{positioned between the surfaces to be joined (**B29C 65/5035** takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from

WO8404486:

---

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Adhesive processes in general: Joining materials by welding overlapping edges with an insertion of plastic material | C09J 5/10 |
---

B29C 65/5071
{and being composed by one single element}
Example 2, from DE102005010467:

**Fig. 8**

![Diagram](image1)

**Fig. 2**

![Diagram](image2)

**Fig. 6**

![Diagram](image3)

---

**B29C 65/5078**

(and being composed by several elements)

**Definition statement**

This place covers:

Example 1, from
US2009317580:

Example 2, from

Fig. 1
B29C 65/5078 (continued)

US2003138586:

B29C 65/5085
(and comprising grooves, e.g. being E-shaped, H-shaped)

Definition statement

This place covers:
Example 1, from
FR2919819:

**B29C 65/5092**

{characterised by the tape handling mechanisms, e.g. using vacuum}

**Definition statement**

*This place covers:*

Example 1, from
WO0046013:

B29C 65/52

{characterised by the way of} applying the adhesive {(B29C 65/50 takes precedence; apparatus for applying liquids in general B05C; processes for applying liquids in general B05D)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Devices for, or methods of, sealing or securing package folds or closures applying adhesives or sealing liquids | B65B 51/02 |
| Devices for, or methods of, sealing or securing package folds or closures applying adhesives or sealing liquids using applicator nozzles | B65B 51/023 |
| Devices for, or methods of, sealing or securing package folds or closures applying adhesives or sealing liquids using rotating applicators | B65B 51/026 |

B29C 65/521

{by spin coating}

Definition statement

This place covers:

Example 1, from
US2009040913:

Example 2, from

US6263939:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Applying liquids to surfaces by spin coating  B05D 1/005
B29C 65/522
{by spraying, e.g. by flame spraying}

Definition statement

This place covers:

Example 1, from JP2008114530:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Spraying apparatus in general       | B05B     |
| Applying liquids to surfaces by spraying | B05D 1/02 |
| Applying liquids to surfaces by flame spraying | B05D 1/08 |

B29C 65/523
{by dipping}

Definition statement

This place covers:

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Applying liquids to surfaces by dipping | B05D 1/18 |

B29C 65/524

{by applying the adhesive from an outlet device in contact with, or almost in contact with, the surface of the part to be joined}

Definition statement

This place covers:

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Applying liquids to surfaces by applying the liquid from an outlet device in contact with, or almost in contact with, the surface

B29C 65/524

{by extrusion coating}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Applying liquids to surfaces by extrusion coating

B05D 1/265

B29C 65/526

{by printing or by transfer from the surfaces of elements carrying the adhesive, e.g. using brushes, pads, rollers, stencils or silk screens}

Definition statement

This place covers:

Example 1, from
US2005173059:

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

Applying liquids to surfaces by transfer from the surfaces of elements carrying the liquid, e.g. brushes, pads, rollers

B05D 1/28

B29C 65/527

{by gravity only, e.g. by pouring}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

Applying liquids to surfaces by gravity only

B05D 1/30

B29C 65/528

{by CVD or by PVD, i.e. by chemical vapour deposition or by physical vapour deposition}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

Applying liquids to surfaces by vapo-deposition of organic layers

B05D 1/60
Applying liquids to surfaces by plasma-deposition of organic layers

### B29C 65/561

{using screw-threads being integral at least to one of the parts to be joined}

**Definition statement**

*This place covers:*

Example 1, from JP2010247350:

![Image](image1)

### B29C 65/562

{using extra joining elements, i.e. which are not integral with the parts to be joined (using plastic snap elements B29C 65/58; using plastic rivets B29C 65/601)}

**Definition statement**

*This place covers:*

Example 1, from JP11090986:

![Image](image2)
**B29C 65/564**

{hidden in the joint, e.g. dowels or Z-pins (B29C 65/603 takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from WO9829243:

![Diagram](image1)

**B29C 65/565**

{involving interference fits, e.g. force-fits or press-fits (B29C 65/66 takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from US2007258756:

![Diagram](image2)

**B29C 65/567**

{using a tamping or a swaging operation, i.e. at least partially deforming the edge or the rim of a first part to be joined to clamp a second part to be joined}

**Definition statement**

*This place covers:*

Example 1, from
B29C 65/568
{using a swaging operation, i.e. totally deforming the edge or the rim of a first part to be joined to clamp a second part to be joined}

Definition statement
This place covers:
Example 1, from

XP000362330:
B29C 65/601
{using extra riveting elements, i.e. the rivets being non-integral with the parts to be joined}

Definition statement

This place covers:

Example 1, from JP3205132:

Example 2, from DE3835027:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joining sheets or plates, in general, by means of riveting</td>
<td>F16B 5/04</td>
</tr>
<tr>
<td>Rivets</td>
<td>F16B 19/04</td>
</tr>
<tr>
<td>Riveting of metal parts</td>
<td></td>
</tr>
</tbody>
</table>
**B29C 65/602**

{using hollow rivets (**B29C 65/607** takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from JP8127185:

---

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riveting of metal parts by riveting hollow rivets mechanically</td>
<td>B21J 5/04</td>
</tr>
<tr>
<td>Riveting of metal parts by riveting hollow rivets by means of hydraulic, liquid, or gas pressure</td>
<td>B21J 15/06</td>
</tr>
<tr>
<td>Hollow rivets</td>
<td>F16B 19/08</td>
</tr>
</tbody>
</table>

**B29C 65/603**

{the rivets being pushed in blind holes}

**Definition statement**

*This place covers:*

Example 1, from DE623911:

---

Example 2, from
B29C 65/604
{in both parts}

Definition statement
This place covers:
Example 1, from FR2831229:

Example 2, from US3612803:

B29C 65/605
{the rivets being molded in place, e.g. by injection}

Definition statement
This place covers:
Example 1, from
GB893375:

B29C 65/606

{the rivets being integral with one of the parts to be joined, i.e. staking}

Definition statement

This place covers:

Example 1, from EP1488913:

Example 2, from XP000362330:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Joining superposed metal plates by locally deforming without slitting or piercing | B21D 39/031 |
| Joining superposed metal plates by locally deforming, by fitting a projecting part integral with one plate in a hole of the other plate | B21D 39/032 |
Joining sheets or plates, in general, by means of riveting, without the use of separate rivets

**B29C 65/607**

*{the integral rivets being hollow}*

**Definition statement**

*This place covers:*

Example 1, from

EP1190804:

Example 2, from

XP000362330:

**B29C 65/609**

*{the integral rivets being plunge-formed}*

**Definition statement**

*This place covers:*

Example 1, from
DE1294647:

B29C 65/62
Stitching

Definition statement
This place covers:
Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hems or seams of garments</td>
<td>A41D 27/24</td>
</tr>
<tr>
<td>Sewing in general</td>
<td>D05B</td>
</tr>
<tr>
<td>Joining belts by sewing</td>
<td>F16G 3/10</td>
</tr>
</tbody>
</table>

B29C 65/64

Joining a non-plastics element to a plastics element, e.g. by force (B29C 65/44 takes precedence)

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle superstructures characterised by the material thereof,</td>
<td>B62D 29/005</td>
</tr>
<tr>
<td>characterised by combining metal and synthetic material, preformed</td>
<td></td>
</tr>
<tr>
<td>metal and synthetic material elements being joined together</td>
<td></td>
</tr>
</tbody>
</table>
B29C 65/66
by liberation of internal stresses, e.g. shrinking of one of the parts to be joined

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Shaping by liberation of internal stresses | B29C 61/00 |

B29C 65/74
by welding and severing {, or by joining and severing, the severing being performed in the area to be joined, next to the area to be joined, in the joint area or next to the joint area}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Medical tube couplings for connecting tubes having sealed ends by cutting and welding | A61M 39/146 |

Special rules of classification

When classifying in this group, joining techniques are additionally classified in the relevant groups, e.g. in B29C 65/02 and subgroups.

B29C 65/7433
{the tool being a wire}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Severing with heated wires | B26F 3/12 |

B29C 65/7435
{the tool being a roller}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Severing with heated rollers or discs | B26F 3/10 |
B29C 65/7441

{for making welds and cuts of other than simple rectilinear form}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Closing semi-rigid or rigid containers or receptacles after filling, by feeding web material to securing means and securing by heat-sealing | B65B 7/164 |

B29C 65/7443

{by means of ultrasonic vibrations}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Details of apparatus for cutting, cutting-out, stamping-out, punching, perforating, or severing by vibrating, e.g. ultrasonically | B26D 7/086 |

B29C 65/7457

{comprising a perforating tool}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Perforating strips of completed packages | B65B 61/007 |

B29C 65/7461

{for making welds and cuts of other than simple rectilinear form}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Closing semi-rigid or rigid containers or receptacles after filling, by feeding web material to securing means and securing by heat-sealing | B65B 7/164 |
B29C 65/76
Making non-permanent or releasable joints

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Layered products permitting easy separation | B32B 7/06 |

B29C 65/7841

{Holding or clamping means for handling purposes (clamping means for the purpose of applying pressure on the parts to be joined, in the area to be joined B29C 66/81; work holders in general B25B; devices for holding or positioning work for welding metal B23K 37/04)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Clamps for holding or positioning work for welding metal | B23K 37/0435 |
| Jigs for positioning work for welding metal | B23K 37/0443 |
| Clamps for plates in general | B25B 5/145 |
| Clamps for pipes in general | B25B 5/147 |

B29C 65/7861

{In-line machines, i.e. feeding, joining and discharging are in one production line (B29C 65/7879, B29C 65/7888 take precedence)}

Definition statement

This place covers:

Example 1, from
DE4336274:

**FIG. 1**

**B29C 65/7864**

{using a feeding table which moves to and fro (oscillating around an axis B29C 65/7876)}

**Definition statement**

*This place covers:*

Example 1, from
B29C 65/7867

{using carriers, provided with holding means, said carriers moving in a closed path}

Definition statement

This place covers:

Example 1, from
Example 2, from DE1058426:
B29C 65/787
{using conveyor belts or conveyor chains (B29C 66/83421, B29C 66/83521, B29C 66/83531 take precedence)}

Definition statement
This place covers:
Example 1, from
DE3807164:

B29C 65/7879
{said parts to be joined moving in a closed path, e.g. a rectangular path (B29C 65/7888 takes precedence)}

Definition statement
This place covers:
Example 1, from
B29C 65/7882

{said parts to be joined moving in a circular path}

Definition statement

This place covers:

Example 1, from
Example 2, from

DE1143630:
**B29C 65/7885**

{Rotary turret joining machines, i.e. having several joining tools moving around an axis}

**Definition statement**

*This place covers:*

Example 1, from FR2167559:

**B29C 65/8207**

{by mechanical methods}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Investigating strength properties of welds by application of mechanical stress | G01N 2203/0296 |
B29C 65/8215
{Tensile tests}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Investigating strength properties of solid materials by applying steady tensile forces | G01N 3/08 |

B29C 65/8223
{Peel tests}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Investigating strength properties of solid materials by applying steady shearing forces | G01N 3/24 |

B29C 65/823
{Bend tests}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Investigating strength properties of solid materials by applying steady bending forces | G01N 3/20 |

B29C 65/8238
{Impact tests}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Investigating strength properties of solid materials by applying a single impulsive force | G01N 3/30 |
B29C 65/8246

{Pressure tests, e.g. hydrostatic pressure tests}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Investigating fluid-tightness of structures | G01M 3/00 |

B29C 65/8253

{by the use of waves or particle radiation, e.g. visual examination, scanning electron microscopy, or X-rays (B29C 65/8292 takes precedence)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Investigating materials by the use of wave or particle radiation | G01N 21/00 - G01N 23/00 |

B29C 65/8261

{by the use of thermal means}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Investigating materials by the use of thermal means | G01N 25/00 |

B29C 65/8269

{by the use of electric or magnetic means}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Investigating materials by the use of electric or magnetic means | G01N 27/00 |
B29C 65/8292
{by the use of ultrasonic, sonic or infrasonic waves}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Investigating materials by the use of ultrasonic, sonic or infrasonic waves G01N 29/00

B29C 66/00

{General aspects of processes or apparatus for joining preformed parts (means for handling the parts to be joined B29C 65/78; testing the joint B29C 65/82)}

Definition statement

This place covers:

General aspects dealing with the joint area (cf. B29C 66/01 and subgroups), e.g.:

- pre-treatments (cf. B29C 66/02 and subgroups);
- post-treatments (cf. B29C 66/03 and subgroups);
- particular design of joint configurations (cf. B29C 66/05 and subgroups);
- General aspects of joining substantially flat articles (cf. B29C 66/40 and subgroups);
- General aspects of joining tubular articles; General aspects of joining hollow-preforms to form hollow articles (cf. B29C 66/50 and subgroups);
- Specific composition, properties or structure of the material to be joined (cf. B29C 66/70 and subgroups);
- General aspects of machine constructions (cf. B29C 66/80 and subgroups), e.g.:
  - constructional aspects of the welding jaw (cf. B29C 66/81 and subgroups);
  - transmission or actuating mechanisms for joining tools (cf. B29C 66/82 and subgroups);
  - specific movements of the joining tools (cf. B29C 66/83 and subgroups);
  - Measuring or controlling the joining process (cf. B29C 66/90 and subgroups).

References

Limiting references

This place does not cover:

Joining methods; means for handling the parts to be joined; testing the joint B29C 65/002 - B29C 65/002; B29C 65/76; B29C 65/78; B29C 65/82

Special rules of classification

Patent literature (e.g. patent applications, patent specifications):
Claims / claimed subject-matter:

Independent claims: compulsory invention information;

Dependent claims: at least compulsory additional information (or compulsory invention information if appropriate).

Figures - depicted subject-matter: at least compulsory additional information (or compulsory invention information if appropriate).

Description - described subject-matter: at least desirable additional (or compulsory invention information if appropriate).

Tables: at least compulsory additional information.

Non-patent literature (e.g. scientific non-patent publications):

Figures - depicted subject-matter: compulsory invention information;

Abstract: compulsory invention information;

Description: at least desirable additional information (or compulsory invention information if appropriate).

N.B.: in this main group, it is compulsory that any disclosed aspect relating to the invention is identified by the corresponding classification code(s).

**B29C 66/001**

**{Joining in special atmospheres}**

**References**

*Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

| Closing containers in chambers maintained under vacuum or super-atmospheric pressure or containing a special atmosphere, e.g. of inert gas | B65B 31/02 |

**B29C 66/0016**

**{Liquid environments, i.e. the parts to be joined being submerged in a liquid}**

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/0044

{using a separating sheet, e.g. fixed on the joining tool}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/0041
{movable, e.g. mounted on reels}

Definition statement
This place covers:
Example 1, from
WO2008005882:

**B29C 66/02**

{Preparation of the material, in the area to be joined, prior to joining or welding (B29C 66/32 takes precedence)}

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Conditioning or physical treatment of the material to be shaped, in general | B29B 13/00 |
| Adhesive processes in general involving pretreatment of the surfaces to be joined | C09J 5/02 |

**B29C 66/02242**

{Perforating or boring}

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Perforating material prior to packaging | B65B 61/02 |
### B29C 66/02245

**{Abrading, e.g. grinding, sanding, sandblasting or scraping}**

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Conditioning or physical treatment of the material to be shaped, by grinding, in general | B29B 13/10 |

### B29C 66/0242

**{Heating, or preheating, e.g. drying (B29C 66/3464 takes precedence)}**

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Conditioning of the material to be shaped, by heating, in general | B29B 13/02 |
| Conditioning of the material to be shaped, by drying, in general | B29B 13/04 |

### B29C 66/0244

**{Cooling}**

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Conditioning of the material to be shaped, by cooling, in general | B29B 13/04 |

### B29C 66/026

**{Chemical pre-treatments (B29C 66/028 takes precedence)}**

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Chemical treatment of shaped articles made of macromolecular substances | C08J 7/00 |
B29C 66/028

{Non-mechanical surface pre-treatments, i.e. by flame treatment, electric discharge treatment, plasma treatment, wave energy or particle radiation (B29C 65/14 takes precedence; non-mechanical surface treatment of plastics in general B29C 59/08 - B29C 59/16)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

- Conditioning or physical treatment of the material to be shaped, by using wave energy or particle radiation, in general: B29B 13/08
- Chemical modification of shaped articles made of macromolecular substances by wave energy or particle radiation treatment: C08J 7/123

B29C 66/03

{After-treatments in the joint area (B29C 66/3262 takes precedence)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

- After-treatment, in general, of articles without altering their shape: B29C 71/00
- After-treatment, in general, of articles without altering their shape, by wave energy or particle radiation: B29C 71/04

B29C 66/03241

{Flattening}

Definition statement

This place covers:

Example 1, from
Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flattening</td>
<td>e.g. flat ironing or smoothing an e.g. overlap joint</td>
</tr>
</tbody>
</table>

B29C 66/03242

{of sheets being positioned in abutment, e.g. after folding open of an overlap joint}

Definition statement

This place covers:

Example 1, from
References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Thermal after-treatment, in general, of articles without altering their shape</th>
<th>B29C 71/02</th>
</tr>
</thead>
</table>

B29C 66/034
{Thermal after-treatments}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Cooling, or cooling and pressing, package closures after heat-sealing</th>
<th>B65B 51/32</th>
</tr>
</thead>
</table>

B29C 66/0342
{Cooling, e.g. transporting through welding and cooling zone}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Cooling</th>
<th>B29C 35/16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling</td>
<td>B29C 35/16</td>
</tr>
</tbody>
</table>
B29C 66/0384

{the coating material being in tape, strip or band form (joining using adhesive tapes covering both elements to be joined B29C 65/5042)}

Definition statement

This place covers:
Example 1, from
US2010151176:

FIG. 3

FIG. 5A

FIG. 5B
B29C 66/05

{Particular design of joint configurations}

Special rules of classification

In this group the possible supplementary joining material (e.g. adhesive, adhesive tapes or extra joining elements, e.g. extra riveting elements) is not taken into account for the joint configuration. The use of supplementary joining material (e.g. adhesive, adhesive tapes or extra joining elements, e.g. extra riveting elements) has to be additionally classified as such (e.g. in B29C 65/48 and subgroups, B29C 65/50 and subgroups, B29C 65/562 and subgroups or B29C 65/601 and subgroups).

B29C 66/10

{particular design of the joint cross-sections}

Definition statement

This place covers:

Example 1, B29C 66/112 (single lapped joint) and B29C 66/131 (single flanged joint), from JP2009202894:

![Example 1 Diagram]

Example 2, B29C 66/135 (single hemmed joint) and B29C 66/112 (single lapped joint), from EP0721745:

![Example 2 Diagram]

Example 3, B29C 66/135 (single hemmed joint) and B29C 66/112 (single lapped joint), from
B29C 66/11

{Joint cross-sections comprising a single joint-segment, i.e. one of the parts to be joined comprising a single joint-segment in the joint cross-section (B29C 66/12 and subgroups take precedence)}

Definition statement

This place covers:

Example 2, B29C 66/112 (single lapped joint) and B29C 66/114 (single butt joint), from NL1028543C:

Example 3, B29C 66/116 (single bevelled joint) and B29C 66/112 (single lapped joint), from
US2009307995:

**B29C 66/1122**

{Single lap to lap joints, i.e. overlap joints (B29C 66/45, B29C 66/472, B29C 66/52272 take precedence)}

**Definition statement**

*This place covers:*

Example 1, from

JP2007112127:

Example 2, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Overlap laser welding of metal parts | B23K 26/244 |

B29C 66/1142

{Single butt to butt joints}

Definition statement

This place covers:

Example 1,

from

JP2007296857:

Example 2, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Joining sheets, plates or panels in abutting relationship, relating to finishing work on buildings | E04F 2201/01 |

B29C 66/1162

{Single bevel to bevel joints, e.g. mitre joints}

Definition statement

This place covers:

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Welded mitre corner joints for windows, doors, or the like frames or wings E06B 3/9608

B29C 66/118

{Single monotone curved joints}

Definition statement

This place covers:

Example 1, from
B29C 66/1182
{the joint being C-shaped}

Definition statement
This place covers:
Example 1, from
JP2011008277:

---

B29C 66/122
{Joint cross-sections combining only two joint-segments, i.e. one of the parts to be joined comprising only two joint-segments in the joint cross-section (B29C 66/124 takes precedence)}

Definition statement
This place covers:
Example 1, B29C 66/1224 (comprising at least a butt joint-segment) and B29C 66/1226 (comprising at least one bevelled joint-segment), from
JP2011008277:

---

Example 2, B29C 66/1224 (comprising at least a butt joint-segment) and B29C 66/1222 (comprising at least a lapped joint-segment), from
Example 3, B29C 66/1224 (comprising at least a butt joint-segment) and B29C 66/1222 (comprising at least a lapped joint-segment), from DE19510493:

Example 4, B29C 66/1222 (comprising at least a lapped joint-segment) and B29C 66/1226 (comprising at least one bevelled joint-segment), from WO2005095828:
B29C 66/12261
{the two joint-segments being bevelled, e.g. the two joint-segments forming a V}

Definition statement
This place covers:
Example 1, from
JP2011008277:

![Diagram of two joint-segments forming a V]

B29C 66/1228
{comprising at least one monotone curved joint-segment}

Definition statement
This place covers:
Example 1, from
EP2402145:

![Diagram of a curved joint-segment]

B29C 66/124
{Tongue and groove joints}

Definition statement
This place covers:
Example 1, from
B29C 66/12421
{Teardrop-like, waterdrop-like or mushroom-like interlocking undercuts}

Definition statement

This place covers:
Example 1, from DE2645771:

Example 2, from FR2575804:

Example 3, from
US3695340:

B29C 66/12423

{Dovetailed interlocking undercuts}

Definition statement

This place covers:
Example 1, from
JP55051527:

Example 2, from
B29C 66/12441
{being a single wall}

Definition statement

This place covers:
Example 1, from

US2005284559:

B29C 66/12443
{having the tongue substantially in the middle}

Definition statement

This place covers:
Example 1, from
JP11291347:

B29C 66/12445
{having the tongue on the side}

Definition statement

*This place covers:*

Example 1, from JP2977035B1:

B29C 66/12449
{being asymmetric (B29C 66/12445 takes precedence)}

Definition statement

*This place covers:*

Example 1, from
Example 2, from GB2314597:

B29C 66/12461
{being rounded, i.e. U-shaped or C-shaped}

Definition statement
This place covers:
Example 1, from
B29C 66/12463
{being tapered}

Definition statement
This place covers:
Example 1, from
US2005284559:

B29C 66/12464
{being V-shaped}

Definition statement
This place covers:
Example 1, from
DE10109594:

**B29C 66/12469**

*{being asymmetric}*

**Definition statement**

*This place covers:*

Example 1, from GB2314597:

Example 2, from
GB2314597:

Example 3, from GB2314597:

**B29C 66/1248**

{Interpenetrating groove joints (interpenetrating fingered joints **B29C 66/139**)}

**Definition statement**

*This place covers:*

Example 1, from
US4252849:

B29C 66/126

{Tenon and mortise joints (tenons and mortises for positioning purposes B29C 65/7814)}

Definition statement

This place covers:

Example 1, from JP3254332:

Example 2, from
Definition statement

This place covers:

Example 1, B29C 66/12841 (two butt joint-segments) and B29C 66/1282 (one overlap joint-segment), from

EP1935618:
Example 2, B29C 66/1281 (two butt joint-segments) and B29C 66/1282 (one overlap joint-segment), from DE19718790:

Example 3, B29C 66/1281 (two bevelled joint-segments) and B29C 66/1282 (one overlap joint segment), from DE19718790:

Example 4, B29C 66/1281 (two butt joint-segments) and B29C 66/1286 (one bevelled joint-segment), from
Example 5, B29C 66/12841 (two butt joint-segments) and B29C 66/1286 (one bevelled joint-segment), from DE102008010384:

Fig. 3b

Example 6, B29C 66/12821 (two overlap joint-segments) and B29C 66/12841 (two butt joint-segments), from DE19510493:

Example 7, B29C 66/12822 (three overlap joint-segments) and B29C 66/12841 (two butt joint-segments), from
Example 8, B29C 66/12822 (at least three overlap joint-segments) and B29C 66/12842 (three butt joint-segments), from

US5160771:

Example 9, B29C 66/12821 (two overlap joint-segments) and B29C 66/1284 (one butt joint-segment), from
B29C 66/1282
{comprising at least three bevelled joint-segments}

Definition statement
This place covers:
Example 1, from
BE640458:

B29C 66/12881
{comprising at least two monotone curved joint-segments}

Definition statement
This place covers:
Example 1, from
US5698358:

Example 2, from
US5698358:

**B29C 66/1312**

{Single flange to flange joints, the parts to be joined being rigid (the parts to be joined being flexible B29C 66/133)}

**Definition statement**

*This place covers:*

Example 1, from DE19510493:

**B29C 66/133**

{Fin-type joints, the parts to be joined being flexible (the parts to be joined being rigid B29C 66/1312)}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/1352

{Single hem to hem joints}

Definition statement

This place covers:
Example 1, from EP0721745:

Example 2, from
B29C 66/137

{Beaded-edge joints or bead seals (for sealing or securing package folds or closures B65B 51/24)}

Definition statement

This place covers:
Example 1, from

JP49045179:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Making brushes by welding together bristles made e.g. of plastic materials | A46B 3/06 |

B29C 66/14

{the joint having the same thickness as the thickness of the parts to be joined (B29C 66/1142 takes precedence)}

Definition statement

This place covers:
Example 1, from
WO9215817:

Example 2, from CH403537:

**B29C 66/21**

{said joint lines being formed by a single dot or dash or by several dots or dashes, i.e. spot joining or spot welding}

**Definition statement**

*This place covers:*

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Non-woven fabrics formed from fleeces or layers composed of fibres by welding together the fibres at spaced points or locations | D04H 1/5405 |

B29C 66/221

{being in the form of a sinusoidal wave (B29C 66/2272 takes precedence)}

Definition statement

This place covers:

Example 1, from
Example 2, from EP0343629:

**B29C 66/223**

{being in the form of a triangle wave or of a sawtooth wave, e.g. zigzagged}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from EP0343629:

**B29C 66/225**

{being castellated, e.g. in the form of a square wave or of a rectangular wave (B29C 66/2276 takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/2272

{Teardrop-like, waterdrop-like or mushroom-like interlocking undercuts (tongue and groove joints or tenon and mortise joints comprising teardrop-like, waterdrop-like or mushroom-like interlocking undercuts B29C 66/12421)}

Definition statement

This place covers:

Example 1, from
DE3809907:

Example 2, from EP1318327:

**B29C 66/2274**

{Dovetailed interlocking undercuts (tongue and groove joints or tenon and mortise joints comprising dovetailed interlocking undercuts [B29C 66/12423])}

**Definition statement**

*This place covers:*

Example 1, from
DE3809907:

B29C 66/232

{said joint lines being multiple and parallel, i.e. the joint being formed by several parallel joint lines}

Definition statement

This place covers:

Example 1, from EP0783956:

B29C 66/234

{said joint lines being in the form of tessellations}

Definition statement

This place covers:

Example 1, from
US4265954:

**B29C 66/24221**

{being circular (**B29C 66/51** takes precedence)}

**Definition statement**

This place covers:

Example 1, from EP2364836:

FIG. 2A

FIG. 2B
B29C 66/24223
{being oval}

Definition statement
*This place covers:*
Example 1, from
US2010326113:

B29C 66/24241
{forming a triangle}

Definition statement
*This place covers:*
Example 1, from
US3667593:

B29C 66/24244

{forming a rectangle}

**Definition statement**

*This place covers:*

Example 1, from

GB2394690:
B29C 66/24245
{forming a square}

Definition statement
This place covers:
Example 1, from
JP60137630:

B29C 66/24249
{forming a specific polygon not provided for in B29C 66/24241 - B29C 66/24243}

Definition statement
This place covers:
Example 1, from
**Definition statement**

*This place covers:*

Example 1, from EP0343629:

Example 2, from EP1516816:

**B29C 66/244**

{said joint lines being non-straight, e.g. forming non-closed contours}
JP52098783:

B29C 66/242
{in the form of a single arc of circle}

Definition statement
This place covers:
Example 1, from
EP0343629:

Example 2, from
JP52098783:

B29C 66/246
{said joint lines forming figures, e.g. animals, flowers, hearts}

Definition statement
This place covers:
Example 1, from
B29C 66/301

{Three-dimensional joints, i.e. the joined area being substantially non-flat (B29C 66/5223, B29C 66/5224, B29C 66/5225 take precedence)}

Definition statement

This place covers:

Example 1, from
B29C 66/30221
{said melt initiators being point-like}

Definition statement

This place covers:
Example 1, from
JP63023237:
**B29C 66/30223**

{said melt initiators being rib-like}

**Definition statement**

*This place covers:*

Example 1, from

JP2004202828:

![Diagram](image1.png)

**B29C 66/3024**

{said melt initiators being non-integral with the parts to be joined}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/303
{the joint involving an anchoring effect (B29C 66/341, B29C 65/56 and subgroups take precedence)}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Measures or configurations in general for obtaining anchoring effects in the contact areas between layers | B29C 37/0078 |

B29C 66/30321
{making use of protusions belonging to at least one of the parts to be joined}

Definition statement
This place covers:
Example 1, from
Example 2, from
JP59127982:

B29C 66/30325
{making use of cavities belonging to at least one of the parts to be joined}

Definition statement
This place covers:
Example 1, from
**B29C 66/3034**

{making use of additional elements, e.g. meshes}

**Definition statement**

*This place covers:*

Example 1, from

DE2746544:

![Figure 3](image)

**B29C 66/30341**

{non-integral with the parts to be joined, e.g. making use of extra elements (B29C 65/562 takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from

EP0158528:

![Figures 1, 2, 3, 4](images)
**B29C 66/304**

{Joining through openings in an intermediate part of the article ([B29C 66/3034 takes precedence])}

**Definition statement**

This place covers:

Example 1, from

CH644411:

![FIG. 2](image1)

![FIG. 3](image2)

Example 2, from

DE4428938:

![FIG. 4](image3)

![FIG. 5](image4)
B29C 66/306

{Applying a mark during joining}

Definition statement

This place covers:
Example 1, from
JP1199845:

B29C 66/30621

{in the form of letters}

Definition statement

This place covers:
Example 1, from
B29C 66/30623

{in the form of numbers}

Definition statement

This place covers:
Example 1, from
FR2207812:

B29C 66/322

{Providing cavities in the joined article to collect the burr}

Definition statement

This place covers:
Example 1, from
This group also covers providing cavities in the joined article to collect adhesive.

**B29C 66/324**

*Avoiding burr formation*

**Definition statement**

*This place covers:*

Example 1, from
EP0415068:

**Fig 3**

B29C 66/324

\{on the inside of a tubular or hollow article\}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/326

{Shaping the burr, e.g. by the joining tool}

**Definition statement**

*This place covers:*

Example 1, from
US2003046906:

B29C 66/326
{as after-treatment, e.g. by a separate tool}

Definition statement
This place covers:
Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Treating the weld bead of metal tubes | B21C 37/0811 |

B29C 66/344

{Stretching or tensioning the joint area during joining}

Definition statement

This place covers:

Example 1, from
US2009032166:

**FIG. 4D**

B29C 66/345

{Progressively making the joint, e.g. starting from the middle (B29C 66/8341, B29C 65/12, B29C 65/14, B29C 65/16 take precedence)}

**Definition statement**

This place covers:
Example 1, from
Definition statement

This place covers:

Example 1, from
B29C 66/346

{Making joints having variable thicknesses in the joint area, e.g. by using jaws having an adapted configuration}

Definition statement

This place covers:

Example 1, from
Example 2, from EP1468914:

B29C 66/3462
(by differentially heating the zones of different thickness)

Definition statement
This place covers:
Example 1, from
EP1837161:

B29C 66/3472

{in the plane of the joint, e.g. along the joint line in the plane of the joint or perpendicular to the joint line in the plane of the joint}

Definition statement

This place covers:

Example 1, from

DE19624625:
B29C 66/3474

{perpendicular to the plane of the joint}

Definition statement

*This place covers:*

Example 1, from

US2009294047:

![Diagram](image)

B29C 66/348

{Avoiding melting or weakening of the zone directly next to the joint area, e.g. by cooling}

Definition statement

*This place covers:*

Example 1, from
B29C 66/349

{Cooling the welding zone on the welding spot}

Definition statement

This place covers:

Example 1, from
Definition statement

This place covers:

Example 1, from

US3231444:
B29C 66/40

{General aspects of joining substantially flat articles, e.g. plates, sheets or web-like materials; Making flat seams in tubular or hollow articles; Joining single elements to substantially flat surfaces}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Joining sheets or plates in general</th>
<th>F16B 5/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joining sheets or plates in general, by means of welds</td>
<td>F16B 5/08</td>
</tr>
</tbody>
</table>

B29C 66/43

{Joining a relatively small portion of the surface of said articles (B29C 66/45 takes precedence)}

Definition statement

This place covers:

Example 1,

from

JP2007296857:

Example 1, from
JP2007112127:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Joining sheets, plates or panels, relating to finishing work on buildings | E04F 2201/00 |

B29C 66/431

{Joining the articles to themselves (B29C 66/432 and B29C 66/433 take precedence)}

Definition statement

This place covers:

Example 1, from

US6213184:

B29C 66/4312

—for making flat seams in tubular or hollow articles, e.g. transversal seams

Definition statement

This place covers:

Example 1, from
DE102009003029:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rollers for producing longitudinal and transverse seams simultaneously in</td>
<td>B65B 51/28</td>
</tr>
<tr>
<td>package webs or tubes</td>
<td></td>
</tr>
<tr>
<td>Device specially adapted for producing transverse seams in package webs</td>
<td>B65B 51/30</td>
</tr>
<tr>
<td>or tubes, e.g. for subdividing filled tubes, by applying pressure and</td>
<td></td>
</tr>
<tr>
<td>heat</td>
<td></td>
</tr>
</tbody>
</table>

B29C 66/43121

{Closing the ends of tubular or hollow single articles, e.g. closing the ends of bags (closing tube ends B29C 57/10)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closing bags by reciprocating or oscillating members applying or generating</td>
<td>B65B 51/146</td>
</tr>
<tr>
<td>heat or pressure or combinations thereof</td>
<td></td>
</tr>
</tbody>
</table>
**B29C 66/43122**

{Closing the top of gable top containers (gable top containers **B65D 5/067**)}

**Definition statement**

*This place covers:*

Example 1, from

JP9142441:

![Diagram](image1)

Example 2, from

EP0097984:

![Diagram](image2)
**B29C 66/43123**

{Closing the ends of squeeze tubes, e.g. for toothpaste or cosmetics (producing flexible squeeze tubes by combined operations **B29D 23/20**; collapsible tubes **B65D 35/00**)}

**Definition statement**

*This place covers:*

Example 1, from

DE29905766U

---

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Heating tube ends</th>
<th>B29B 13/025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closing collapsible or resilient tubes, e.g. for tooth paste, after filling</td>
<td>B65B 7/14</td>
</tr>
</tbody>
</table>

**B29C 66/43129**

{said flat seams being transversal but non-orthogonal with respect to the tubular or hollow articles, i.e. oblique}

**Definition statement**

*This place covers:*

Example 1, from
DE102009003029:

**B29C 66/432**

{for making tubular articles or closed loops, e.g. by joining several sheets (B29C 66/547 takes precedence; bending and joining sheets at right angles to the longitudinal axis of the article being formed and joining the edges B29C 53/38); for making hollow articles or hollow preforms}

**Definition statement**

*This place covers:*

Example 1, from
FR2856008:

Example 2, from
DE19813387:

Example 3, from
B29C 66/4322
(by joining a single sheet to itself (B29C 66/4332 takes precedence))

Definition statement
This place covers:
Example 1, from
JP10016058:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>B29C 66/4322 (continued)</th>
<th>CPC - B29C - 2020.02</th>
</tr>
</thead>
</table>

Tube advancing means combined with longitudinal welding devices, for enclosing successive articles, or quantities of material, in webs formed into tubes in situ around filling nozzles

B65B 9/2021

**B29C 66/4324**

{for making closed loops, e.g. belts}

**Definition statement**

*This place covers:*

Example 1, from

WO2006003524:

---

![Detail 6](image)

**References**

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Joining belts by sewing, sticking, vulcanishing, or the like; Constructional adaptations of the belt ends for this purpose</th>
</tr>
</thead>
</table>

F16G 3/10
B29C 66/4329
{the joint lines being transversal but non-orthogonal with respect to the axis of said tubular articles, i.e. being oblique}

Definition statement
This place covers:
Example 1, from
JP10016058:

B29C 66/433
{Casing-in, i.e. enclosing an element between two sheets by an outlined seam (for bookbinding B42C 11/06; for packaging B65B; by laminating B32B 37/00; enclosing tubular articles between substantially flat elements B29C 66/53261)}

Definition statement
This place covers:
Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Articles or materials enclosed between two opposed sheets or blanks having their margins united, e.g. by heat-sealing or welding | B65D 75/30 |
| Flat or ribbon cables comprising parallel wires, sandwiched between two insulating layers | H01B 7/0838 |

B29C 66/433

{by folding a sheet over}

Definition statement

This place covers:

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Articles or materials wholly enclosed in sheets or blanks doubled around contents and having their opposed free margins united, e.g. by heat-sealing or welding | B65D 75/20 |

B29C 66/4342

{Joining substantially flat articles for forming corner connections, e.g. for making V-shaped pieces}

Definition statement

This place covers:

Example 1, from
B29C 66/43421

{with a right angle, e.g. for making L-shaped pieces}

Definition statement

This place covers:

Example 1, from FR2919819:
B29C 66/4344
{Joining substantially flat articles for forming fork connections, e.g. for making Y-shaped pieces}

Definition statement
This place covers:
Example 1, from
WO0216784:

![Fig. 8](image1)

B29C 66/43441
{with two right angles, e.g. for making T-shaped pieces, H-shaped pieces}

Definition statement
This place covers:
Example 1, from
FR2919819:

![Fig. 5c](image2)

Example 2, from
Example 3, from WO0216784:

**Fig. 5e**

**B29C 66/4361**

{with four right angles, e.g. for making +-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/43461 (continued)

FR2919819:

B29C 66/435
{Making large sheets by joining smaller ones or strips together}

Definition statement
This place covers:
Example 1, from
EP2123515:
B29C 66/436

{Joining sheets for making articles comprising cushioning or padding materials, the weld being performed through the cushioning material, e.g. car seats (joining through openings B29C 66/304)}

**Definition statement**

*This place covers:*

Example 1, from WO2009133508:

Example 2, from WO2005097474:

Example 3, from
GB2389560:

**B29C 66/437**

{Joining plastics plates for making venetian blinds (making venetian blinds in general E06B 9/266)}

**Definition statement**

*This place covers:*

Example 1, from
DE19753716:

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Making honeycombed structures for window coverings | B31D 3/0215 |

B29C 66/438

{Joining sheets for making hollow-walled, channelled structures or multi-tubular articles}

Definition statement

This place covers:
Example 1, from
B29C 66/439

{Joining sheets for making inflated articles without using a mould}

Definition statement

This place covers:

Example 1, from
CA2654675:

Example 2, from US2008250753:

FIG. 2

Example 3, from
B29C 66/45

{Joining of substantially the whole surface of the articles (methods or apparatus for laminating B32B 37/00)}

Definition statement

This place covers:

Example 1, from
Example 2, from FR2584336:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

- Forming webs by bringing together several webs for manufacturing absorbent pads

B29C 66/452

{the article having a disc form, e.g. making CDs or DVDs}

Definition statement

This place covers:

Example 1, from

US2008283192:

Example 2, from
References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Producing carriers of records containing fine grooves or impressions, e.g. disc records, by combined operations | B29D 17/00 |
| Producing optically read record carriers, e.g. optical discs by combined operations | B29D 17/005 |
| Apparatus or processes specially adapted for the manufacture of record carriers | G11B 7/26 |

B29C 66/47
{Joining single elements to sheets, plates or other substantially flat surfaces (B29C 66/5326 takes precedence)}

Definition statement
This place covers:
Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Devices for fastening nuts to surfaces, e.g. sheets, plates, by means of welding or riveting | F16B 37/06 |

B29C 66/472

{said single elements being substantially flat}

Definition statement

This place covers:

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Devices for applying ribbons to babies' napkins, e.g. diapers | A61F 13/15593 |

B29C 66/4722

{Fixing strips to surfaces other than edge faces (fixing strips to edge faces B29C 63/0026)}

Definition statement

This place covers:

Example 1, from
EP0395836:

**B29C 66/4724**

{said single elements being appliques, e.g. in the form of a text or drawing}

**Definition statement**

*This place covers:*

Example 1, from

JP2233230:
B29C 66/4742
{said single elements being spouts}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Non-integral spouts connected to a planar surface of the wall of packages, said packages comprising articles or materials enclosed in strips, sheets, blanks, tubes, or webs of flexible sheet material</th>
</tr>
</thead>
<tbody>
<tr>
<td>B65D 75/5877</td>
</tr>
</tbody>
</table>

B29C 66/47421
{said spouts comprising flanges}

Definition statement
This place covers:
Example 1, from
US3231444:

![Fig. 1](image)

![Fig. 2](image)
**B29C 66/49**

{Internally supporting the, e.g. tubular, article during joining (B29C 66/63 takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from DE2922834:

Example 2, from
EP2360007:

**B29C 66/492**

{using a fluid}

**Definition statement**

*This place covers:*

Example 1, from

US2007079924:
B29C 66/50

{General aspects of joining tubular articles; General aspects of joining long products, i.e. bars or profiled elements; General aspects of joining single elements to tubular articles, hollow articles or bars; General aspects of joining several hollow-preforms to form hollow or tubular articles}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Connections of rods or tubes in general | F16B 7/00 |
| Non-disconnectable couplings for attachment of a member on a shaft or on a shaft-end involving gluing, welding or the like | F16D 1/068 |

B29C 66/522

{Joining tubular articles (B29C 66/53241 takes precedence)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Connecting a tube to a hub for making catheters or medical or surgical tubes | A61M 25/0014 |
| Plastic pipe welded joints; Plastic pipe adhesive joints | F16L 47/02 |

B29C 66/5221

{for forming coaxial connections, i.e. the tubular articles to be joined forming a zero angle relative to each other}

Definition statement

This place covers:

Example 1, from
Example 2, from US5793017:
**B29C 66/5223**
{for forming corner connections or elbows, e.g. for making V-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from

EP0382971:

![Diagram](image)

Example 2, from
EP0141450:

B29C 66/52231

{with a right angle, e.g. for making L-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from
EP0141450:
B29C 66/5224
{for forming fork-shaped connections, e.g. for making Y-shaped pieces}

Definition statement
This place covers:
Example 1, from WO9415137:

Example 2, from

FIG. 14
B29C 66/5224

{with two right angles, e.g. for making T-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from
WO9415137:

Example 2, from

CH398211:

Example 3, from
FR2596133:

**B29C 66/5225**

{for forming cross-shaped connections, e.g. for making X-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from

WO9415137:
B29C 66/52251
{with four right angles, e.g. for making +-shaped pieces}

Definition statement
This place covers:
Example 1, from
WO9415137:

Example 2, from
FR2596133:

B29C 66/5227
{for forming multi-tubular articles by longitudinally joining elementary tubular articles wall-to-wall (e.g. joining the wall of a first tubular article to the wall of a second tubular article) or for forming multilayer tubular articles}

Definition statement
This place covers:
Example 1, from
JP2001179839:

B29C 66/52271
{one tubular article being placed inside the other}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/52272
{concentrically, e.g. for forming multilayer tubular articles}

Definition statement
This place covers:
Example 1, from
B29C 66/5229
{involving the use of a socket}

Definition statement

This place covers:
Example 1, from
JP2001050464:

B29C 66/52292
{said stop being internal}

Definition statement
This place covers:
Example 1, from
JP55093411:

B29C 66/52293
{said stop being external}

Definition statement
This place covers:
Example 2, from
B29C 66/5293 (continued)

JP55093411:

B29C 66/5294

{said stop being heated}

Definition statement

This place covers:

Example 1, from

DE19628916:

Example 2, from
Example 3, from JP5318596:

B29C 66/52295
{said socket comprising reinforcements}

Definition statement
This place covers:
Example 1, from
Example 2, from WO0106168:

B29C 66/52296
{said socket comprising sealing elements, e.g. gaskets}

Definition statement

This place covers:
Example 1, from
JP4171392:

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Sealing elements in general | F16J 15/00 |

**B29C 66/52297**

{said socket comprising slip-off prevention means (B29C 66/52296 takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from
JP4191592:

**B29C 66/52298**

{said socket being composed by several elements}

**Definition statement**

*This place covers:*

Example 1, from
DE19519341:

Example 2, from

JP5240394:
B29C 66/5241
{for forming coaxial connections, i.e. the profiled elements to be joined forming a zero angle relative to each other}

Definition statement
This place covers:
Example 1, from
WO0189811:

![Fig.1](image1)

![Fig.2](image2)

B29C 66/5243
{for forming corner connections, e.g. for making window frames or V-shaped pieces (welded corner joints for window frames E06B 3/9604)}

Definition statement
This place covers:
Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E06B 3/9604</td>
<td>Welded corner joints for windows, doors, or the like frames or wings</td>
</tr>
</tbody>
</table>

**B29C 66/52431**

{with a right angle, e.g. for making L-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from

DE102007055393:
**B29C 66/5244**
{for forming fork-shaped connections, e.g. for making window frames or Y-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from FR2712345:

![FIG. 3](image1)

![FIG. 4](image2)

**B29C 66/52441**
{with two right angles, e.g. for making T-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from FR2712345:

**FIG. 1**

**FIG. 2**
**B29C 66/52451**

{with four right angles, e.g. for making +-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from

US3707062:

---

**B29C 66/53243**

{said spouts comprising flanges}

**Definition statement**

*This place covers:*

Example 1, from
EP1314539:

B29C 66/53246

{said single elements being spouts, e.g. joining spouts to containers}

Definition statement

This place covers:

Example 1, from
Example 2, from EP1939509:

Fig. 2
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applying rigid valves, spouts, filling tubes to box, carton, envelope or bag</td>
<td>B31B 50/84, B31B 70/844</td>
</tr>
<tr>
<td>Fuel tank inlets</td>
<td>B60K 15/04</td>
</tr>
<tr>
<td>Applying or incorporating rigid fittings, e.g. discharge spouts, to containers or packages</td>
<td>B65B 61/186</td>
</tr>
<tr>
<td>Spouts for containers of polygonal cross-section, said spouts being formed separately from the container</td>
<td>B65D 5/746</td>
</tr>
</tbody>
</table>

B29C 66/53247

{said spouts comprising flanges}

Definition statement

This place covers:

Example 1, from JP63237935:

---

B29C 66/53261

{Enclosing tubular articles between substantially flat elements}

Definition statement

This place covers:

Example 1, from
EP0572187:

B29C 66/53262
{Enclosing spouts between the walls of bags, e.g. of medical bags}

Definition statement
This place covers:
Example 1, from
said spouts comprising wings, e.g. said spouts being of ship-like or canoe-like form to avoid leaks in the corners}

Definition statement

This place covers:

Example 1, from
JP7323478:

B29C 66/534
{Joining single elements to open ends of tubular or hollow articles or to the ends of bars}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Joining a shaft and a balloon for making balloon catheters | A61M 25/1034 |

B29C 66/5344
{said single elements being substantially annular, i.e. of finite length, e.g. joining flanges to tube ends (B29C 66/5346 takes precedence)}

Definition statement

This place covers:

Example 1, from
CH701363:

**FIG. 4**

**FIG. 5**
**B29C 66/53461**

{joining substantially flat covers and/or substantially flat bottoms to open ends of container bodies}

**Definition statement**

*This place covers:*

Example 1, from

DE8716157U:

Example 2, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closing semi-rigid or rigid containers or receptacles after filling, by feeding web material to securing means and securing by heat-sealing</td>
<td>B65B 7/164</td>
</tr>
<tr>
<td>Closing semi-rigid or rigid containers or receptacles after filling, by applying separate preformed closures, e.g. lids, covers, securing said closures on said containers by heat-sealing</td>
<td>B65B 7/2878</td>
</tr>
</tbody>
</table>

B29C 66/53462

{joining substantially flat covers and substantially flat bottoms to open ends of container bodies}

Definition statement

This place covers:

Example 1, from
GB998124:

**Fig. 8.**

B29C 66/53465

{said single flat elements being provided with holes facing the tube ends, e.g. for making heat-exchangers}

**Definition statement**

This place covers:

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Heat-exchanger arrangements for sealing elements into end plates by welding, at least one of the parts being non-metallic, e.g. heat-sealing plastic elements | F28F 9/187 |

B29C 66/54

{Joining several hollow-preforms, e.g. half-shells, to form hollow articles, e.g. for making balls, containers; Joining several hollow-preforms, e.g. half-cylinders, to form tubular articles}

Definition statement

This place covers:

Example 1, from
Example 2, from

JP2009285929:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Manufacturing and assembling intake systems, by joining multiple sections together by welding, bonding or the like

F02M 35/1036
B29C 66/5412
{said substantially flat extra element being flexible, e.g. a membrane (B29C 66/5416 takes precedence)}

Definition statement
This place covers:
Example 1, from
US2009212460:
B29C 66/5414
{said substantially flat extra element being rigid, e.g. a plate (B29C 66/5416 takes precedence)}

Definition statement

This place covers:

Example 1, from

EP2153977:

FIG.3

FIG.4B
B29C 66/5416
{said substantially flat extra element being perforated, e.g. a screen}

Definition statement
This place covers:
Example 1, from
JP5212795:

Example 2, from
FR2276160:
B29C 66/543

{joining more than two hollow-preforms to form said hollow articles}

Definition statement

This place covers:

Example 1, from

DE10216175:

Example 2, from
B29C 66/545

{one hollow-preform being placed inside the other}

Definition statement

This place covers:
Example 1, from

US2009173043:
B29C 66/547

{Joining several hollow-preforms, e.g. half-cylinders, to form tubular articles, e.g. endless tubes}

Definition statement
This place covers:
Example 1, from
DE19519341:

Example 2, from
Example 1, from FR2328315:

Example 2, from FR2328315:
US5007666:

**B29C 66/5474**

{for making fork-shaped pieces, i.e. with 3 branches, e.g. Y-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from
**B29C 66/54741**
{for making T-shaped pieces}

**Definition statement**

*This place covers:*

Example 1, from

JP49003836B:

Example 2, from
US5007666:

**B29C 66/54761**

{for making +shaped pieces}

**Definition statement**

This place covers:

Example 1, from

US5007666:
**B29C 66/549**

{said hollow-preforms being interconnected during their moulding process, e.g. by a hinge}

**Definition statement**

*This place covers:*

Example 1, from

WO03033286:

---

**B29C 66/55**

{sealing elements being incorporated into the joints, e.g. gaskets (**B29C 66/52296** takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Sealing elements in general | F16J 15/00 |

B29C 66/61

{Joining from or joining on the inside (for making tubes by bending sheets and joining from the inside B29C 53/387)}

Definition statement

This place covers:

Example 1, from
Example 2, from EP2253876:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Lining of internal surfaces | B29C 63/26 |
**B29C 66/612**

{Making circumferential joints}

**Definition statement**

*This place covers:*

Example 1, from WO2008028224:

![Diagram](Image)

**B29C 66/632**

{using a fluid}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/634
{using an inflatable core}

Definition statement

This place covers:
Example 1, from

EP0415068:
References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Inflatable cores or mandrels             | B29C 33/505 |
| Collapsible, e.g. inflatable, mandrels especially adapted for winding and joining | B29C 53/824 |

B29C 66/636

{using a support which remains in the joined object}

Definition statement

This place covers:
Example 1, from DE4123383:
B29C 66/65

{with a relative motion between the article and the welding tool ([B29C 65/10, B29C 65/12 take precedence])}

Definition statement

This place covers:

Example 1, from US2006043622:

Example 2, from
Example 3, from

JP2003123512:
**B29C 66/652**

{moving the welding tool around the fixed article}

**Definition statement**

*This place covers:*

Example 1, from

---

*Fig. 4A*

---

US2006043622:

Example 2, from
FR2812372:

B29C 66/69

{General aspects of joining filaments (bundling articles B65B 13/00; interconnecting successive lengths of material B65H 69/00)}

Definition statement

This place covers:

Example 1, from
EP2168755:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making brushes by welding together bristles made of plastic materials</td>
<td>A46B 3/06</td>
</tr>
<tr>
<td>Securing filiform haptic to lens body</td>
<td>A61F 2002/1686</td>
</tr>
<tr>
<td>Methods of, or devices for, Interconnecting successive lengths of</td>
<td>B65H 69/08</td>
</tr>
<tr>
<td>filamentary material by welding</td>
<td></td>
</tr>
<tr>
<td>Non-woven fabrics formed wholly or mainly of staple fibres or like</td>
<td>D04H 1/54</td>
</tr>
<tr>
<td>relatively short fibres, from fleece or layers composed of fibres without</td>
<td></td>
</tr>
<tr>
<td>existing or potential cohesive properties, by welding together the fibres,</td>
<td></td>
</tr>
<tr>
<td>e.g. by partially melting or dissolving</td>
<td></td>
</tr>
</tbody>
</table>

B29C 66/71

(characterised by the composition of the plastics material of the parts to be joined (welding bar compositions **B29C 65/125**))

Special rules of classification

Combination of **B29C 66/71** with the relevant composition index from **B29K 2001/00 - B29K 2095/00** is compulsory.

For instance, "characterised by the composition of the plastics material of the parts to be joined being PTFE" has to be classified as: **B29C 66/71; B29K 2027/18**.
**B29C 66/721**

{Fibre-reinforced materials (B29C 66/729 takes precedence)}

**Special rules of classification**

Indexing with B29K 2105/06 is optional.

**B29C 66/7212**

{characterised by the composition of the fibres}

**Special rules of classification**

Combination of B29C 66/7212 with the relevant reinforcement composition index from B29K 2201/00 - B29K 2311/14 is compulsory.

For instance, "characterised by the composition of the fibres being carbon" has to be classified as: B29C 66/7212; B29K 2307/04.

**B29C 66/72141**

{Fibres of continuous length}

**Definition statement**

*This place covers:*

Example 1, from EP1892079:

**FIG.1**

Special rules of classification

Indexing from B29K 2105/08 - B29K 2105/10 is optional
**B29C 66/72143**

{Fibres of discontinuous lengths}

**Definition statement**

This place covers:

Example 1, from EP1941987:

---

**Special rules of classification**

Indexing from B29K 2105/12 - B29K 2105/14 is optional

**B29C 66/723**

{being multi-layered (B29C 66/7292, B29C 66/72941 take precedence)}

**Definition statement**

This place covers:

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Layered products essentially comprising natural or synthetic rubber | B32B 25/00 |
| Layered products essentially comprising natural or synthetic rubber comprising rubber as the main or only constituent of a layer, next to another layer of synthetic resin | B32B 25/08 |
| Layered products essentially comprising synthetic resin | B32B 27/00 |
| Layered products essentially comprising synthetic resin as the main or only constituent of a layer next to another layer of synthetic resin of a different kind | B32B 27/08 |

Special rules of classification

Indexing with B29L 2009/00 is optional.

B29C 66/72321

{consisting of metals or their alloys}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Layered products essentially comprising metal as the main or only constituent of a layer, next to another layer of rubber | B32B 15/06 |
| Layered products essentially comprising metal as the main or only constituent of a layer, next to another layer of synthetic resin | B32B 15/08 |
B29C 66/72326
{Glass}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Layered products essentially comprising glass at the main or only constituent of a layer, next to another layer of synthetic resin  B32B 17/10

B29C 66/72328
{Paper}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Layered products essentially comprising natural or synthetic rubber comprising rubber as the main or only constituent of a layer, next to another layer of paper or cardboard  B32B 25/06

Layered products essentially comprising synthetic resin as the main or only constituent of a layer next to another layer of paper or cardboard  B32B 27/10

B29C 66/72329
{Wood}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Layered products essentially comprising wood as the main or only constituent of a layer, next to another layer of synthetic resin or fibre-reinforced resin  B32B 21/08

B29C 66/7252
{hollow-walled}

Definition statement

This place covers: Example 1, from
US6521072:

B29C 66/7252

{multi-channelled or multi-tubular (B29C 66/438, B29C 66/5227 take precedence)}

Definition statement

This place covers:
Example 1, from
US5965238:

**Figure 15**

**Figure 16**

**Figure 17**

**Figure 18**

**B29C 66/72525**

**{comprising honeycomb cores}**

**Definition statement**

*This place covers:*

Example 1, from
FR2557932:

Example 2, from

DE29713027U:
Example 1, from US6017413:

Example 2, from US6017413:

*Fig. 1B*
B29C 66/7254 (continued)

WO2010071525:

FIG. 1a

FIG. 1b

FIG. 1c

B29C 66/727
{being porous, e.g. foam}

Definition statement

This place covers:

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Making filtering elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>B01D 29/012, B01D 29/111</td>
</tr>
</tbody>
</table>

Special rules of classification

Indexing with B29K 2105/04 is optional.

B29C 66/729

{Textile or other fibrous material made from plastics}

Definition statement

This place covers:

Example 1, from
Example 2, from
EP1145657:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garment hems or seams made by welding or gluing</td>
<td>A41D 27/245</td>
</tr>
<tr>
<td>Joining garments or blanks by gluing or welding</td>
<td>A41H 43/04</td>
</tr>
</tbody>
</table>
Seaming textile materials

B29C 66/7294

{Non woven mats, e.g. felt}

Definition statement

This place covers:

Example 1, from

DE4024252:

Example 2, from

JP2264065:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Non-woven fabrics formed wholly or mainly of staple fibres or like relatively short fibres, from fleece or layers composed of fibres without existing or potential cohesive properties, by welding together the fibres, e.g. by partially melting or dissolving
B29C 66/73
{characterised by the intensive physical properties of the material of the parts to be joined, by the optical properties of the material of the parts to be joined, by the extensive physical properties of the parts to be joined, by the state of the material of the parts to be joined or by the material of the parts to be joined being a thermoplastic or a thermoset}

Special rules of classification
Indexing in B29K 2995/00 is optional.

B29C 66/73341
{at least one of the parts to be joined being glossy or reflective}

Special rules of classification
Indexing with B29K 2995/0022 & B29K 2995/003 is optional.

B29C 66/73361
{at least one of the parts to be joined being opaque to visible light}

Special rules of classification
Indexing with B29K 2995/0025 is optional.

B29C 66/73365
{at least one of the parts to be joined being transparent or translucent to visible light}

Special rules of classification
Indexing with B29K 2995/0026 & B29K 2995/0029 is optional.

B29C 66/73715
{heat-shrinkable}

Special rules of classification
Indexing with B29K 2995/0049 is optional.

B29C 66/7375
{uncured, partially cured or fully cured}

Special rules of classification
Indexing with B29K 2105/24, B29K 2105/243, B29K 2105/246 is optional.
B29C 66/739
{characterised by the material of the parts to be joined being a thermoplastic or a thermoset}

Special rules of classification
Joining a thermoplastic part to a thermoset part is to be classified both in B29C 66/739 and in B29C 66/7394.

B29C 66/742
{to metals or their alloys}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Vehicle superstructures characterised by the material thereof, characterised by combining metal and synthetic material, preformed metal and synthetic material elements being joined together | B62D 29/005 |
| Connecting arrangements or other fittings specially adapted to be made of plastics or to be used with pipes made of plastics, for joints between metal and plastic pipes | F16L 47/24 |

Special rules of classification
Indexing from B29K 2705/00 - B29K 2705/14 is optional.

B29C 66/7428
{Transition metals or their alloys}

Definition statement
This place covers:
This group covers e.g. Titanium.

B29C 66/744
{to elements other than metals}

Special rules of classification
Indexing from B29K 2707/00 - B29K 2707/04 is optional.

B29C 66/746
{to inorganic materials not provided for in groups B29C 66/742 - B29C 66/744}

Special rules of classification
Indexing from B29K 2709/00 - B29K 2709/12 is optional.
B29C 66/7465

{Glass}

Definition statement

This place covers:

Example 1, from

US2010227175:

Fig. 2

B29C 66/748

{to natural products or their composites, not provided for in groups B29C 66/742 - B29C 66/746}

Special rules of classification

Indexing from B29K 2711/00 - B29K 2711/14 is optional.

B29C 66/7487

{Wood}

Definition statement

This place covers:

Example 1, from
WO9601377:

**B29C 66/8122**

{characterised by the composition of the material constituting the pressing elements, e.g. constituting the welding jaws or clamps}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

Moulds or cores in general, characterised by the material

**B29C 33/38**

**Special rules of classification**

Combination of **B29C 66/8122** with the relevant composition index from **B29K 2801/00** - **B29K 2911/14** is compulsory.

For instance, "characterised by the composition of the material constituting the welding jaws being PTFE" has to be classified as: **B29C 66/8122; B29K 2827/18**.

**B29C 66/81241**

{being porous or sintered}

**Definition statement**

This place covers:

Example 1, from
B29C 66/8126
{characterised by the intensive physical properties or by the optical properties of the material constituting the pressing elements, e.g. constituting the welding jaws or clamps}

Special rules of classification
Indexing in B29K 2995/00 is optional.

B29C 66/81267
{Transparent to electromagnetic radiation, e.g. to visible light}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

Heating or curing by wave energy or particle radiation using transparent moulds B29C 35/0888

B29C 66/81415
{being bevelled}

Definition statement
This place covers:
Example 1, from
B29C 66/81417

{being V-shaped}

Definition statement

This place covers:

Example 1, from

FR2807392:
B29C 66/81419
(and flat)

Definition statement

This place covers:
Example 1, from
FR2874188:

---

B29C 66/81422

{being convex}

Definition statement

This place covers:
Example 1, from
GB2305391:

Special rules of classification

N.B.: the convexity of the transverse cross-section of a roller, cylinder or drum (i.e. the cross-section transversal to its axis) is not considered to correspond to inventive subject-matter and as such is not covered by this group.

**B29C 66/81423**

{being concave}

**Definition statement**

This place covers:

Example 1, from
GB2305391:

Example 2, from

US3367809:

Example 3, from
WO2005042232:

**B29C 66/81433**

{being toothed, i.e. comprising several teeth or pins (comprising a single tooth **B29C 66/81429**), or being patterned}

**Definition statement**

*This place covers:*

Example 1, from

**US4398986:**

![Diagram](image)
**B29C 66/81435**

{comprising several parallel ridges, e.g. for crimping (comprising a single ridge **B29C 66/81427**)}

**Definition statement**

This place covers:

Example 1, from EP2113371:

Example 2, from
B29C 66/81453
{being made of flexible slats, flexible fins, flexible bristles or springs, e.g. coiled springs}

Definition statement
This place covers:
Example 1, from
DEF3912198:

**FIG.1**

**FIG.5**

**B29C 66/81455**

{being a fluid inflatable bag or bladder, a diaphragm or a vacuum bag for applying isostatic pressure (inflatable element positioned between the joining tool and a backing-up part **B29C 66/82421**)}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Bags for isostatic pressing, for compression moulding</th>
<th>B29C 43/3642</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applying pressure through the wall of an inflated bag or diaphragm, for thermoforming</td>
<td>B29C 51/28</td>
</tr>
<tr>
<td>Lining or sheathing using sheet or web-like material applied by &quot;rubber&quot; bag or diaphragm</td>
<td>B29C 63/16</td>
</tr>
<tr>
<td>Devices for gluing soles on shoe bottoms using flexible diaphragm pressing devices</td>
<td>A43D 25/07</td>
</tr>
<tr>
<td>Pressing means in the form of a flexible element, e.g. diaphragm, urged by fluid pressure</td>
<td>B30B 5/02</td>
</tr>
<tr>
<td>Vacuum pressing, for laminating</td>
<td>B32B 37/1018</td>
</tr>
</tbody>
</table>

B29C 66/81457

{comprising a block or layer of deformable material, e.g. sponge, foam, rubber (pressing elements supported or backed-up by resilient material B29C 66/8161)}

Definition statement

This place covers:

Example 1, from
EP1027981:  

Example 2, from  
US3830681:  

Fig. 3  

Fig. 4
B29C 66/81459
{being a filled deformable bladder, e.g. bladder filled with oil, with granules or
with a meltable solid material (B29C 66/81455 takes precedence)}

Definition statement
This place covers:
Example 1, from
US2806116:

B29C 66/81461
{being multi-lamellar or segmented, i.e. comprising a plurality of strips, plates
or stacked elements}

Definition statement
This place covers:
Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Vice jaws being composed of a plurality of parts adapting to the shape of the workpiece, the parts having a linear movement

B29C 66/81465

{one placed behind the other in a single row in the feed direction}

Definition statement

This place covers:

Example 1, from
B29C 66/81467

{arranged in an offset pattern}

**Definition statement**

This place covers:

Example 1, from
US2010116409:

Example 2, from

WO9828123:

FIG. 1

FIG. 11
B29C 66/81469
{one placed next to the other in a single line transverse to the feed direction, e.g. shoulder to shoulder sonotrodes}

Definition statement
This place covers:
Example 1, from
US2010116409:

FIG. 10

B29C 66/8161
{said pressing elements being supported or backed-up by springs or by resilient material}

Definition statement
This place covers:
Example 1, from
**B29C 66/8161**

(by resilient material)

**Definition statement**

This place covers:

Example 1, from

DE3236164:
B29C 66/8163
{Self-aligning to the joining plane, e.g. mounted on a ball and socket}

Definition statement

This place covers:
Example 1, from
DE19540119:

Example 2, from
FR2829962:
B29C 66/8165
{Carrier plates for mounting joining tool parts, e.g. for re-arranging the tool parts to make other forms}

Definition statement
This place covers:
Example 1, from
DE20019000U:

Example 2, from
GB885309:

Example 3, from FR1310917:
B29C 66/8167

{Quick change joining tools or surfaces}

Definition statement

This place covers:

Example 1, from

DE20317289U:

Example 2, from
Example 3, from US3426951:
**B29C 66/81811**
{of the welding jaws}

**Definition statement**

*This place covers:*
Example 1, from

GB952042:

---

**B29C 66/81812**
{the welding jaws being cooled from the outside, e.g. by blowing a gas or spraying a liquid}

**Definition statement**

*This place covers:*
Example 1, from
Example 2, from US4426244:

B29C 66/81815
{of the clamps}

Definition statement
This place covers:
Example 1, from
FR2330518:

B29C 66/81821
{of the welding jaws}

Definition statement

This place covers:

Example 1, from
B29C 66/8222

{Pinion or rack mechanisms}

Definition statement

This place covers:

Example 1, from

WO9738905:
**B29C 66/8223**

{Worm or spindle mechanisms}

**Definition statement**

*This place covers:*

Example 1, from

DE4241974:

---

**B29C 66/8224**

{Chain or sprocket drives}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/8225

\{Crank mechanisms\}

**Definition statement**

*This place covers:*

Example 1, from DE4425207:
DE4425207:

B29C 66/8226
{Cam mechanisms; Wedges; Eccentric mechanisms}

Definition statement
This place covers:
Example 1, from
JP2002144434:
**B29C 66/82261**

{Wedges}

**Definition statement**

*This place covers:*

Example 1, from EP0344137:

![Fig. 1f](image)

Example 2, from
B29C 66/82263
{Follower pin or roller cooperating with a groove}

Definition statement
This place covers:
Example 1, from
EP0368095:

**FIG. 4**

**B29C 66/82265**

{Eccentric mechanisms}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/8227
{using springs}

Definition statement
This place covers:
Example 1, from

B29C 66/8242
{Pneumatic or hydraulic drives (using fluid pressure directly acting on the parts to be joined B29C 66/8266)}

Definition statement
This place covers:
Example 1, from
Example 2, from
B29C 66/82421
{using an inflatable element positioned between the joining tool and a backing-up part}

Definition statement
This place covers:
Example 1, from

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Presses characterised by an elastic bag or diaphragm expanded by fluid pressure | B30B 1/003 |
| Presses using a fluid connecting unit between drive shaft and press ram         | B30B 1/265 |

B29C 66/8248
{Pressure application by weights (by the own weight of the joining tool B29C 66/8282)}

Definition statement
This place covers:
Example 1, from
US4247273:

B29C 66/8262

{using "pressure means" which are associated with at least one of the parts to be joined and remain in or on it}

Definition statement

This place covers:

Example 1, from
EP2159037:

**B29C 66/8264**

{using the thermal expansion of the parts to be joined}

**Definition statement**

*This place covers:*

Example 1, from

FR2535337:
B29C 66/8266
{using fluid pressure directly acting on the parts to be joined}

Definition statement
This place covers:
Example 1, from
DE19715779:

Example 2, from
B29C 66/82661
{by means of vacuum}

**Definition statement**

This place covers:

Example 1, from
B29C 66/832
{Reciprocating joining or pressing tools (B29C 66/834 takes precedence)}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Applying or generating heat by reciprocating members for sealing package folds or closures | B65B 51/14 |
| Device specially adapted for producing transverse or longitudinal seams in webs or tubes, by applying pressure and heat, reciprocating along only one axis | B65B 51/303 |

B29C 66/83221
{cooperating reciprocating tools, each tool reciprocating along one axis}

Definition statement
This place covers:
Example 1, from
Example 2, from
B29C 66/8324

{Joining or pressing tools pivoting around one axis (scissor or lever transmission mechanisms B29C 66/8221; tools self-aligning to the joining plane B29C 66/8163)}

Definition statement

This place covers:

Example 1, from
FR2198872:

B29C 66/8321
{cooperating pivoting tools}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/834
{moving with the parts to be joined}

Definition statement

This place covers:

Example 1, B29C 66/83411 (roller, cylinder or drum types) and B29C 66/83511 (jaws mounted on rollers, cylinders or drums), from US6454890:

Example 2, B29C 66/83541 (flying jaws) and B29C 66/83421 (band or belt types), from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Application</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasonic welding of metals using a roller</td>
<td>B23K 20/103</td>
</tr>
<tr>
<td>Applying or generating heat by rotary members for sealing package folds or closures</td>
<td>B65B 51/16</td>
</tr>
<tr>
<td>Applying or generating heat by endless bands or chains for sealing package folds or closures</td>
<td>B65B 51/18</td>
</tr>
<tr>
<td>Rollers for producing longitudinal and transverse seams simultaneously in package webs or tubes</td>
<td>B65B 51/28</td>
</tr>
<tr>
<td>Counter-rotating devices for producing transverse or longitudinal seams in package webs or tubes by applying pressure and heat</td>
<td>B65B 51/306</td>
</tr>
<tr>
<td>Heated rollers for induction heating</td>
<td>H05B 6/145</td>
</tr>
</tbody>
</table>

B29C 66/83413

{cooperating rollers, cylinders or drums}

Definition statement

This place covers:

Example 1, from
DE2259203:

Example 2, from JP2006027671:

Example 3, from
US6454890:

B29C 66/83415

{the contact angle between said rollers, cylinders or drums and said parts to be joined being a non-zero angle (B29C 66/83433 takes precedence)}

Definition statement

This place covers:

Example 1, from
US2003010439:

**B29C 66/83417**

{said rollers, cylinders or drums being hollow}

**Definition statement**

*This place covers:*

Example 1, from
US3059690:

B29C 66/83421
{band or belt types (B29C 66/83431 takes precedence)}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

Devices for, or methods of, sealing or securing package folds or closures, by applying or generating heat by endless bands

B65B 51/18

B29C 66/83423
{cooperating bands or belts}

Definition statement
This place covers:
Example 1, from
US4411310:

**FIG. 18**

**B29C 66/83431**

{rollers, cylinders or drums cooperating with bands or belts}

**Definition statement**

*This place covers:*

Example 1, from

WO2006087224:
B29C 66/83433
{the contact angle between said rollers, cylinders or drums and said bands or belts being a non-zero angle}

Definition statement
This place covers:
Example 1, from US2003010439:

B29C 66/83435
{said rollers, cylinders or drums being hollow}

Definition statement
This place covers:
Example 2, from
B29C 66/83441
(Ball types)

Definition statement

This place covers:

Example 1, from
FR1264171:

**B29C 66/83511**

{jaws mounted on rollers, cylinders or drums}

**Definition statement**

*This place covers:*

Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

- Rollers for producing longitudinal and transverse seams simultaneously in package webs or tubes

**B29C 66/83513**

{cooperating jaws mounted on rollers, cylinders or drums and moving in a closed path}

**Definition statement**

This place covers:

Example 1, from
Example 2, from JP2006027671:

**B29C 66/83521**

{jaws mounted on bands or belts}

**Definition statement**

*This place covers:*

Example 1, from
WO03097341:

B29C 66/83523

{Cooperating jaws mounted on cooperating bands or belts and moving in a closed path}

Definition statement

This place covers:

Example 1, from EP1442984:

Example 2, from
WO0026010:

**FIG. 1**

**B29C 66/83533**

{Cooperating jaws mounted on cooperating chains and moving in a closed path}

**Definition statement**

This place covers:

Example 1, from
Example 2, from EP1234772:
**B29C 66/83543**

{cooperating flying jaws}

**Definition statement**

*This place covers:*

Example 1, from

EP0915015:

---

**B29C 66/836**

{Moving relative to and tangentially to the parts to be joined, e.g. transversely to the displacement of the parts to be joined, e.g. using a X-Y table (**B29C 66/65 takes precedence**)}

**Definition statement**

*This place covers:*

Example 1, from
JP58042049:

Example 2, from WO2011065827:

FIG. 2C

FIG. 2D

Example 3, from
B29C 66/8362
{Rollers, cylinders or drums moving relative to and tangentially to the parts to be joined}

Definition statement
This place covers:
Example 1, from
JP58042049:
B29C 66/841

{Machines or tools adaptable for making articles of different dimensions or shapes or for making joints of different dimensions}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Arrangements to enable machines to produce packages of different sizes | B65B 59/00 |

B29C 66/8414

{of different diameter}

Definition statement

This place covers:

Example 1, from

DE2654342:

Example 2, from
B29C 66/843

{Machines for making separate joints at the same time in different planes; Machines for making separate joints at the same time mounted in parallel or in series}

Definition statement
This place covers:
Example 1, from
Example 2, from EP1837163:
**B29C 66/8432**

{Machines for making separate joints at the same time mounted in parallel or in series}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from

US4158584:
B29C 66/845
{C-clamp type or sewing machine type}

Definition statement

This place covers:
Example 1, from
US2583709:

Example 2, from
JP3126529:

Example 3, from

GB2062538:

Example 4, from
Example 5, from US2003010439:
B29C 66/847
{Drilling standard machine type}

Definition statement
This place covers:
Example 1, from
JP61189925:

B29C 66/849
{Packaging machines}

Definition statement
This place covers:
Example 1, from
References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Machines, apparatus or devices for, or methods of, packaging articles or materials, in general |
|---------------------------------------------------------------|---|
| B65B                                                          |   |

**B29C 66/849**

{welding through a filled container, e.g. tube or bag}

**Definition statement**

*This place covers:*

Example 1, from
Example 2, from
WO2011001528:
References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Subdividing filled tubes to form two or more packages by sealing involving displacement of contents | B65B 9/12 |

B29C 66/851

{Bag or container making machines}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Making boxes, cartons, envelopes, or bags, in general | B31B |

B29C 66/8511

{Bag making machines}

Definition statement

This place covers:
Example 1, from
CA1196848:
B29C 66/853
{Machines for changing web rolls or filaments, e.g. for joining a replacement web to an expiring web}

Definition statement
This place covers:
Example 1, from
EP2204274:

FIG. 1

FIG. 2A

FIG. 2B

FIG. 2C

FIG. 2D
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing web rolls in general, by attaching, e.g. pasting, the replacement web to the expiring web</td>
<td>B65H 19/18</td>
</tr>
</tbody>
</table>

B29C 66/855

{Belt splicing machines}

Definition statement

This place covers:

Example 1, from

US4376668:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus or tools for joining belts in general</td>
<td>F16G 3/003</td>
</tr>
<tr>
<td>Joining belts by sewing, sticking, vulcanising, or the like</td>
<td>F16G 3/10</td>
</tr>
</tbody>
</table>
B29C 66/857
{Medical tube welding machines}

Definition statement
This place covers:
Example 1, from WO0062820:

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Medical tube connectors, for connecting tubes having sealed ends, by cutting and welding | A61M 39/146 |

B29C 66/861
{Hand-held tools}

Definition statement
This place covers:
Example 1, from
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Hand tools in general</th>
<th>B25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand tools for securing ends of binding material by welding, or heat-sealing or by applying adhesive</td>
<td>B65B 13/327</td>
</tr>
<tr>
<td>Devices for, or methods of, sealing or securing package folds or closures, by applying or generating heat by reciprocating or oscillating hand-operated members</td>
<td>B65B 51/148</td>
</tr>
</tbody>
</table>

**B29C 66/8612**

{Ironing tool type}

**Definition statement**

This place covers:

Example 1, from
US2008115885:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Irons for laying carpeting by using hot-melt adhesives | A47G 27/0443 |
| Hand irons | D06F 75/00 |

B29C 66/8614

{Tongs, pincers or scissors}

Definition statement

This place covers:
Example 1, from
Definition statement

This place covers:
Example 1, from
B29C 66/863
{Robotised, e.g. mounted on a robot arm}

Definition statement
This place covers:
Example 1, from
EP2255952:

**FIG. 4A**

Example 2, from
References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Manipulators in general | B25J |

B29C 66/8652

{being pushed by hand or being self-propelling}

Definition statement

This place covers:
Example 1, from
DE202008008145U:
Definition statement

*This place covers:*

Example 1, from US4913772:
**B29C 66/86523**

{the traction being made on the seam}

**Definition statement**

*This place covers:*

Example 1, from

DE9317104U:

![Diagram](image)

**B29C 66/86533**

{by rails}

**Definition statement**

*This place covers:*

Example 1, from
B29C 66/86535

{by the edge of one of the parts to be joined or by a groove between the parts to be joined, e.g. using a roller}

Definition statement

This place covers:

Example 1, from

US3080910:
Example 2, from DE29713474U:

Example 3, from EP0787572:
B29C 66/872

{Starting or stopping procedures}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Trouble-shooting during starting or stopping moulding or shaping apparatus | B29C 37/0096 |

B29C 66/874

{Safety measures or devices}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Safety-devices for packaging machines | B65B 57/005 |
| Safety devices specially designed for welding in general | F16P 1/06 |

B29C 66/8742

{for operators (B29C 66/002 takes precedence)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Masks, shields or hoods for welders | A61F 9/06 |

B29C 66/8748

{involving the use of warnings}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Audible or visible alarm signals for packaging machines | B65B 57/18 |
B29C 66/9121
{by measuring the temperature}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

Measuring temperature

B29C 66/91212
{involving measurement means being part of the welding jaws, e.g. integrated in the welding jaws}

Definition statement
This place covers:
Example 1 (to be also classified in B29C 66/91231), from JP2002104311:

B29C 66/91216
{enabling contactless temperature measurements, e.g. using a pyrometer}

Definition statement
This place covers:
Example 1 (to be also classified in B29C 66/91221), from
Example 2 (to be also classified in B29C 66/91231), from EP2216167:

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Radiation pyrometry | G01J 5/00 |
B29C 66/91218
{using colour change, e.g. using separate colour indicators}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Measuring temperature using change of colour or translucency | G01K 11/12 |

B29C 66/91221
{of the parts to be joined}

Definition statement

This place covers:
Example 1, from EP1225028:

Example 2, from
B29C 66/91231
{of the joining tool}

Definition statement
This place covers:
Example 1 (to be also classified by B29C 66/91212), from
JP2002104311:
Example 2 (to be also classified by B29C 66/91216), from EP2216167:

**B29C 66/9131**
{by measuring the heat or the thermal flux, i.e. the heat flux}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Measuring quantity of heat | G01K 17/00 |

**B29C 66/9141**
{by controlling or regulating the temperature}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Heat seal temperature control of devices for, or method of, sealing or securing package folds or closures by applying or generating heat | B65B 2051/105 |

**B29C 66/91423**
{using joining tools having different temperature zones or using several joining tools with different temperatures}

**Definition statement**

*This place covers:*

Example 1, from
Definition statement

This place covers:
Example 1, from
EP2018088:
**B29C 66/91643**

{following a heat-time profile (B29C 65/38 takes precedence)}

**Definition statement**

*This place covers:*

Example 1, from US5561964:

---

**B29C 66/91645**

{by steps}

**Definition statement**

*This place covers:*

Example 1, from DE19545317:
B29C 66/91653
{by controlling or regulating the voltage, i.e. the electric potential difference or electric tension}

Definition statement
This place covers:
Example 1, from
JPH0581103U:

B29C 66/91655
{by controlling or regulating the current intensity}

Definition statement
This place covers:
Example 1, from
{higher than said fusion temperature}

**Special rules of classification**

Documents merely stating that the welding occurs above the melting temperature of the parts to be joined do not belong to this class.

Documents specifying the welding temperature by giving actual values, e.g. absolute or in relation to the melting temperature, do belong to this class

**B29C 67/00**

**Shaping techniques not covered by groups B29C 39/00 - B29C 65/00, B29C 70/00 or B29C 73/00**

**Definition statement**

*This place covers:*

- e.g. plants for moulding, curing or finishing articles, e.g. disposable plants, plants mounted on vehicles; e.g. lay-out of plants or machines, e.g. arrangement, sequence or exchange of machines, machine parts or tools not otherwise provided for; e.g. modular plants or machines, i.e. plants or machines build up from modular parts
B29C 69/00

Combinations of shaping techniques not provided for in a single one of main groups B29C 39/00 - B29C 67/00, e.g. associations of moulding and joining techniques; Apparatus therefore { (B29C 48/001 takes precedence)}

Relationships with other classification places

The group B29C 69/00 and it subgroups cover combination(s) of shaping techniques not otherwise provided for in B29C, where the invention lies in the combination of techniques - not in the single technique as such - and wherein the invention is related to a shaping problem.

Documents not relating to a shaping problem do not belong to this group. For instance, documents relating to combined operations for making a particular article, which involves a mere combination of moulding steps, but failing to relate to a moulding problem as such, do not belong to this group; such documents do belong to the relevant B29D entry, if such entry exists, and if not then to the relevant product/article entry.

References

Limiting references

This place does not cover:

| Injection moulding combined with a final shaping operation | B29C 45/0053 |
| Extrusion moulding combined with other shaping operations | B29C 48/001  |
| Auxiliary operations prior to blow moulding | B29C 49/4252 |
| Auxiliary operations after blow moulding | B29C 49/4273 |
| Auxiliary operations prior to thermoforming | B29C 51/264 |
| Auxiliary operations after thermoforming | B29C 51/266 |

B29C 69/004

{making articles by joining parts moulded in separate cavities, said parts being in said separate cavities during said joining { (B29C 45/006, B29C 51/267 take precedence)}

Relationships with other classification places

Documents classified in this group relate to a joining problem. Documents not relating to a joining problem do not belong to this group. For instance, documents relating to combined operations for making a particular article, which involves a mere combination of the step of moulding parts in separate cavities and the step of joining said parts, but failing to relate to a joining problem as such, do not belong to this group; such documents do belong to the relevant B29D entry, if such entry exists, and if not then to the relevant product/article entry.
B29C 69/005
{cutting-off or cutting-out a part of a strip-like or sheet-like material, transferring that part and fixing it to an article (if labeling see B65C, in combination with box-making B31B 50/81; labelling in general B65C)}

Relationships with other classification places
Documents classified in this group relate to a joining problem. Documents not relating to a joining problem do not belong to this group. For instance, documents relating to combined operations for making a particular article, which involves a mere combination of the step of cutting-off or cutting-out a part of a strip-like or sheet-like material, the step of transferring said part and the step of fixing said part to an article, but failing to relate to a joining problem as such, do not belong to this group; such documents do belong to the relevant B29D entry, if such entry exists, and if not then to the relevant product/article entry.

B29C 70/00
Shaping composites, i.e. plastics material comprising reinforcements, fillers or preformed parts, e.g. inserts

References

Limiting references
This place does not cover:

| Nanocomposites | B82Y 30/00, C08J 5/005, Y01N6/00 |

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Fibre reinforced ceramics | C04B 35/80 |
| Carbon-Carbon composites | C04B 35/83 |
| Manufacture of articles or shaped materials containing macromolecular substances | C08J 5/00 |
| Fibre reinforced metals | C22C49/44 |
| Testing of composites | Q01N 25/72 |
| CAD/CAM | G06F 30/00 |

Glossary of terms
In this place, the following terms or expressions are used with the meaning indicated:

| Fibre or fiber | general expression for a reinforcement in the form of a bundle of filaments. |
| Filament | Single reinforcing body of high aspect ratio, typically produced artificially by pressing a fluid through a small diameter orifice (spinnerette) which then solidifies after leaving the spinnerette by cooling, drying or a chemical reaction or of natural source (single filament of a plant or animal fibre). |
Roving | bundle of fibres or collection of a large number of filaments resulting in a bundle of substantial higher cross section than a fibre alone.
Whisker | typically a short length filament

**B29C 70/02**

comprising combinations of reinforcements, {e.g. non-specified reinforcements, fibrous reinforcing inserts} and fillers, {e.g. particulate fillers}, incorporated in matrix material, forming one or more layers and with or without non-reinforced or non-filled layers {(combinations of fibrous reinforcement only B29C 70/04; combinations of fillers only B29C 70/58; combinations with non reinforcing inserts, e.g. foam blocks, B29C 70/68)}

**References**

*Limiting references*

This place does not cover:

Shaping composites of combinations of different types of fibres

**Further details of subgroups**

**B29C 70/023**

Reinforcing inserts, e.g. bars, profiles, local reinforcements other than fibrous

**B29C 70/025**

combinations of fibrous reinforcements and filler

**B29C 70/04**

comprising reinforcements only, e.g. self-reinforcing plastics

**Definition statement**

This place covers:

heating and fusing of thermoplastic fibres or high aspect ratio elements with high molecular orientation, without the use of a matrix material or with matrix material of the same thermoplastic material as the fibres, yielding a plastic product with anisotropic properties.

Example: heating and compressing of HDPE or PP fibres.

**B29C 70/06**

Fibrous reinforcements only

**Definition statement**

This place covers:

This is not a subgroup of self reinforced plastics unlike the title of B29C 70/04 suggests.

This is in fact the head group of fibre reinforced polymers where there is a distinct fibrous reinforcement and a polymer matrix material.
Special rules of classification

Illustrative example of subject matter classified in B29C 70/081:

EP2112192

Illustrative example of subject matter classified in B29C 70/083:

WO 2009/071824
Illustrative example of subject matter classified in B29C 70/085.
B29C 70/086

{and with one or more layers of pure plastics material, e.g. foam layers (applying a non-preformed coating, e.g. a gel-coat, B29C 37/0025; with foam blocks B29C 70/86)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Use of gel coats | B29C 37/0032 |

Special rules of classification

Illustrative example of subject matter classified in B29C 70/086
**B29C 70/10**

characterised by the structure of fibrous reinforcements {, e.g. hollow fibres}

**Definition statement**

*This place covers:*

technical details of a filaments or fibres, e.g. by cross sectional shape, surface treatment, molecular orientation

![Diagram of various shapes](image)

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Reinforcement yarns or threads for specific use in general industrial applications | D02G 3/447 |

**B29C 70/12**

using fibres of short length, e.g. in the form of a mat {(non-woven fabrics per se D04H 1/00)}

**Definition statement**

*This place covers:*

fibrous structures. Note that polymers containing short fibres without mutual connection are not considered fibrous structures and **B29C 70/00**. If the short fibres are connected, e.g. by bonding, it is considered a fibrous structure.
Relationships with other classification places

Use of short fibres as additive to a polymer are to be classified in the specific moulding technique. e.g. B29C 45/0005 (injection moulding using fibre reinforcements), B29C 48/0011 (extrusion moulding using fibre reinforcements)

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

| Mat         | non-woven |
Definition statement

This place covers:
use of short fibres which are not randomly oriented:

DE 10 2009 020 452 A1  2010.11.25
Anhängende Zeichnungen
B29C 70/18
in the form of a mat, e.g. sheet moulding compound [SMC]

Definition statement

This place covers:
Sheet Molding Compound

SMC is a combination of chopped strands and filled resin in the form of a sheet. Processing SMC by compression molding produces bodywork or structural automotive components and electrical or electronic machine housings in large industrial volumes. The process is also used for other products such as sanitary ware (baths) and urban furniture (stadium and cinema seating). The SMC contains all the components needed to mould the final part (resin, reinforcement, filler, catalyst, low profile additives, etc.) in a malleable and non-tacky sheet. SMC is made from chopped strands sandwiched between two layers of film, onto which the resin paste has already been applied. The SMC passes through a compaction system that ensures complete strand impregnation before being wound into rolls. These are stored for a few days before molding to allow the prepreg to thicken to a moldable viscosity.
**B29C 70/20**

oriented in a single direction, e.g. roofing or other parallel fibres {**B29C 70/083, B29C 70/226** take precedence)}

**Definition statement**

*This place covers:*

Examples:

unidirectional prepregs, moulding compounds with unidirectional fibres.

**Feb. 19, 2009  Sheet 1 of 5  US 2009/0047483**
Special rules of classification
Illustrative example of subject matter classified in B29C 70/202

WO 2007/018096

Illustrative example of subject matter classified in B29C 70/205

WO 6037346

Fig. 1.

Fig. 2.
Illustrative example of subject matter classified in B29C 70/207
**B29C 70/22**

oriented in at least two directions forming a two dimensional structure {(woven fabrics per se D03D; knitted fabrics per se D04D; braid per se D04C)}

**Definition statement**

*This place covers:*

Illustrative examples of subject matter classified in this group:

Typical fabric structures:

![Fabric Structures](image1)

**Figure 2.3** Basic weaves.

![Fabric Structures](image2)

**Figure 2.7** Braiding of a sleeve in progress (courtesy of Atkins & Pierce Co.).
Braid

**Special rules of classification**

Illustrative example of subject matter classified in **B29C 70/222**

Illustrative example of subject matter classified in **B29C 70/224**

**CA 02574144 2007-01-36**
Illustrative example of subject matter classified in B29C 70/226

EP 1 125 728 A1

FIG. 3

Illustrative example of subject matter classified in B29C 70/228
Illustrative example of subject matter classified in B29C 70/24

DE 10 2007 033 869 A1 2009.01.29

Fig. 3

FIG. 2C

FIG. 2B
Illustrative example of subject matter classified in B29C 70/26

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warp</td>
<td>collection of fibres in a fabric in the lengthwise machine direction</td>
</tr>
<tr>
<td>Fill</td>
<td>Fibres in the transverse direction of the warp fibres, shot between warp fibres during the weaving process.</td>
</tr>
<tr>
<td>Tex</td>
<td>indication of the linear weight of a roving, fibre or yarn, 1 Tex = 1 gram/kilometer</td>
</tr>
</tbody>
</table>

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weft = Woof</td>
<td>Fill fibres</td>
</tr>
</tbody>
</table>

B29C 70/30

Shaping by lay-up, i.e. applying fibres, tape or broadsheet on a mould, former or core; Shaping by spray-up, i.e. spraying of fibres on a mould, former or core {(by winding and joining, e.g. filament winding B29C 53/56; for building tyres B29D 30/08)}

Definition statement

This place covers:

B29C 70/30 deals with lay-up specific details. Lay-up is the positioning of reinforcements in or on a mould, former, core or substrate taking into account the anisotropy of the material.
Example: the specific lay-up in terms of sequence and or fibre orientation of fibrous reinforcing layers prior to a moulding process.

**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Moulding specific details</th>
<th>B29C 70/40 - B29C 70/56</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producing fibrous preforms for subsequent moulding</td>
<td>B29B 11/16</td>
</tr>
</tbody>
</table>

**Special rules of classification**

Illustrative example of subject matter classified in **B29C 70/305**

---

**B29C 70/32**

**on a rotating mould, former or core**

**Definition statement**

*This place covers:*

Winding of fibres reinforcements where the layup of the winding is of importance.

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Shaping by helically winding | B29C 53/58 |
Special rules of classification

Illustrative example of subject matter classified in B29C 70/323

Illustrative example of subject matter classified in B29C 70/326
B29C 70/34
and shaping or impregnating by compression {, i.e. combined with compressing after the lay-up operation}

Definition statement
This place covers:
moulding where the layup of the reinforcements (i.e. orientation, position, fibre type) is of importance and the moulding technique has no particular relevance.

Special rules of classification
B29C 70/342
Moulding using isostatic pressing means, e.g. using vacuum bag, silicone core, expanding bags or balloons to apply moulding pressure.

B29C 70/345
moulding where the composite material is moulded by 'hard' or 'stiff' moulding surfaces (e.g. a male and a female metal mould)

Illustrative example of subject matter classified in B29C 70/347
Illustrative example of subject matter classified in B29C 70/382

U.S. Patent May 21, 1996 Sheet 4 of 6 5,518,564

Illustrative example of subject matter classified in B29C 70/384

WO 2018/070245 PCT/FR2009/052623

FIG. 10

FIG. 11

FIG. 1
Illustrative example of subject matter classified in B29C 70/386

Illustrative example of subject matter classified in B29C 70/388
**B29C 70/40**

Shaping or impregnating by compression (B29C 70/34 takes precedence){not applied}

**Definition statement**

This place covers:
**B29C 70/40** up to and including B29C 70/56 deals with moulding specific details

**References**

**Limiting references**

This place does not cover:

| Lay-up specific details | B29C 70/30 |

**B29C 70/44**

using isostatic pressure, e.g. pressure difference-moulding, vacuum bag-moulding, autoclave-moulding or expanding rubber-moulding

**Relationships with other classification places**

B29C 70/443
{and impregnating by vacuum or injection}

Special rules of classification
Illustrative example of subject matter classified in B29C 70/443

FIG. 4

Illustrative example of subject matter classified in B29C 70/446

FIG. 2A

FIG. 2B
Illustrative example of subject matter classified in B29C 70/46

GB2453308
Illustrative example of subject matter classified in B29C 70/462

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTM</td>
<td>resin transfer moulding</td>
</tr>
<tr>
<td>CIRTM</td>
<td>co-injection RTM</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>VI</td>
<td>vacuum infusion</td>
</tr>
<tr>
<td>DRDF</td>
<td>double resin infusion under flexible tooling</td>
</tr>
<tr>
<td>LRI</td>
<td>liquid resin infusion</td>
</tr>
<tr>
<td>MVI</td>
<td>modified vacuum infusion</td>
</tr>
<tr>
<td>RFI</td>
<td>resin film infusion</td>
</tr>
<tr>
<td>RIRM</td>
<td>resin injection recirculation moulding</td>
</tr>
<tr>
<td>SCRIMP</td>
<td>Seeman Composites Resin Infusion Moulding Process</td>
</tr>
<tr>
<td>VAIM</td>
<td>vacuum assisted injection moulding</td>
</tr>
<tr>
<td>VAP</td>
<td>vacuum assisted processing</td>
</tr>
<tr>
<td>VARI</td>
<td>vacuum assisted resin injection system</td>
</tr>
<tr>
<td>VARIM</td>
<td>vacuum assisted resin injection moulding</td>
</tr>
<tr>
<td>V(A)RTM</td>
<td>vacuum (assisted) resin transfer moulding</td>
</tr>
<tr>
<td>VIM</td>
<td>vacuum infusion moulding</td>
</tr>
<tr>
<td>VIMP</td>
<td>vacuum infusion moulding process</td>
</tr>
<tr>
<td>VM/RTM light</td>
<td>a hybrid RIFT/RTM</td>
</tr>
<tr>
<td>VIP</td>
<td>vacuum infusion process</td>
</tr>
</tbody>
</table>

**B29C 70/465**

{and impregnating by melting a solid material, e.g. sheets, powders of fibres}

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Impregnating per se</th>
<th>B29B 15/105 - B29B 15/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitreous materials in general</td>
<td>D21H 13/40</td>
</tr>
</tbody>
</table>
Special rules of classification

Illustrative example of subject matter classified in B29C79/46B:

B29C 70/467

{and impregnating the reinforcements during mould closing (B29C 70/465 takes precedence)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Impregnating of fibrous material per se                                      | B29B 15/105 - B29B 15/14 |
Special rules of classification

Illustrative example of subject matter classified in B29C79/46C:

B29C 70/48

and impregnating the reinforcements in the closed mould, e.g. resin transfer moulding [RTM] {, e.g. by vacuum}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Impregnating of fibrous reinforcement per se | B29B 15/105 - B29B 15/14 |
Special rules of classification

Illustrative example of subject matter classified in **B29C79/48**:
B29C 70/50
for producing articles of indefinite length, e.g. prepregs, sheet moulding compounds [SMC] or cross moulding compounds [XMC]

Special rules of classification
Illustrative example of subject matter classified in B29C79/50:
Illustrative example of subject matter classified in B29C 70/502:

Illustrative example of subject matter classified in B29C 70/504:

SMC Schematic

![Diagram of SMC Schematic](image)

FIG. 2
B29C 70/506
{and impregnating by melting a solid material, e.g. sheet, powder, fibres (B29C 70/508 takes precedence)}

References

Limiting references

This place does not cover:

| Pulp or paper, comprising vitreous materials | D21H 13/40 |

B29C 70/52

Pultrusion, i.e. forming and compressing by continuously pulling through a die

Definition statement

This place covers:
Continuous fibres or fibrous structures are pulled with matrix material through a die.

References

Limiting references

This place does not cover:

| Extrusion moulding compounds comprising short fibres which are pressed through a die | B29C 48/0011 |

Special rules of classification

Illustrative example of subject matter classified in B29C 70/521:
Illustrative example of subject matter classified in B29C 70/52:

B29C 70/523

{and impregnating the reinforcement in the die}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Impregnating per se | B29B 15/14 - B29B 15/105 |
**Special rules of classification**

Illustrative example of subject matter classified in this group:

![Diagram 1](image1)

![Diagram 2](image2)

Illustrative example of subject matter classified in **B29C 70/524**:
Illustrative example of subject matter classified in **B29C 70/526**:  

WO 2009/045190

PCT/US2007/02120

4/4

**FIG. 4**

Illustrative example of subject matter classified in **B29C 70/527**:  

N° 1.485.281  
Organisme dit :  
2 planches. - Pl. 1  
Deutsche Akademie der Wissenschaften zu Berlin

**Fig. 1**
B29C 70/528

{Heating or cooling}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Heating, cooling during moulding in general</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 35/00</td>
</tr>
</tbody>
</table>

B29C 70/54

Component parts, details or accessories; Auxiliary operations {, e.g. feeding or storage of prepregs or SMC after impregnation or during ageing (pretreatment, e.g. impregnation, of reinforcements B29B 15/08)}

Definition statement

This place covers:

All details and auxiliary operations related to shaping of composites consisting of reinforcements only, e.g. sensing means to control curing, impregnation, Positioning reinforcements in a mould, Perforating, cutting or machining during or after moulding.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Releasing articles from moulds or removal of cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 33/44 - B29C 33/54</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Heating and curing during moulding in general</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 35/00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Using release agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>B29C 37/0067</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>G01N</td>
</tr>
</tbody>
</table>
Special rules of classification

Illustrative example of subject matter classified in B29C 70/541:

Illustrative example of subject matter classified in B29C 70/542:

B29C 70/543

e.g. local stitching, bonding, curing to avoid fibrous reinforcement from misaligning during moulding
If an obvious mechanical post treatment is mentioned like deburring, sanding, removal of mould flash, the document should not be classified here. Only if the process contains such treatment which is not obvious for the skilled person, presented as part of the invention or if indispensable for the moulding method presented.

**B29C 70/546**

*{Measures for feeding or distributing the matrix material in the reinforcing structure}*

**Definition statement**

*This place covers:*

methods to improve impregnation of fibrous material, e.g. by modifying surface tension or viscosity of moulding materials (e.g. by heating) and thereby reducing void content of the moulded composite material

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Impregnating of fibrous material per se | B29B 15/105 - B29B 15/14 |

**Special rules of classification**

Illustrative example of subject matter classified in **B29C 70/547**: After curing of the resin, the channels remain in the product. Porous layers can be peeled off if they are separated from the product by a peel ply or perforated film.
Illustrative example of subject matter classified in B29C 70/548:

![Diagram](image)

**B29C 70/56**

**Tensioning reinforcements before or during shaping**

**Definition statement**

*This place covers:*

Methods and apparatuses to apply tension on fibrous reinforcement before or during moulding. Fibrous reinforcements in their dry state are often crimped (not straight) and mechanical properties (tensile and compressive strength and modulus) suffer. Predominantly used to improve the straightness of fibres and thereby impart improved mechanical properties.

**B29C 70/58**

comprising fillers only {, e.g. particles, powder, beads, flakes, spheres (B29C 70/025 takes precedence, agglomerating hollow spheres to produce synthetic foam B29C 70/66; compounding ingredients per se C08K)}

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

<table>
<thead>
<tr>
<th>Moulds from resin bonded particles</th>
<th>B29C 33/3807</th>
</tr>
</thead>
</table>

1002
Special rules of classification

Illustrative example of subject matter classified in B29C 70/585:


FIG. 2

Illustrative example of subject matter classified in B29C 70/60:

EP11003063
Illustrative example of subject matter classified in **B29C 70/603**:

![Diagram](image1)

**FR2703623**

Illustrative example of subject matter classified in **B29C 70/606**:

![Diagram](image2)
Illustrative example of subject matter classified in B29C 70/62:

![Diagram 1](image1)

FR2850634

Illustrative example of subject matter classified in B29C 70/64:

![Diagram 2](image2)

FIG. 3
**B29C 70/66**

the filler comprising hollow constituents, e.g. syntactic foam

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Making or treating expandable particles | B29C 44/3461 |

**Special rules of classification**

Illustrative example of subject matter classified in B29C 70/66:

![Illustrative example of subject matter classified in B29C 70/66](image)

**B29C 70/68**

by incorporating or moulding on preformed parts, e.g. inserts or layers {, e.g. foam blocks (mould constructions therefor B29C 33/12; joining preformed parts by moulding B29C 65/70)}

**Relationships with other classification places**

<table>
<thead>
<tr>
<th>Positioning inserts in moulds</th>
<th>B29C 33/12 - B29C 33/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casting around inserts</td>
<td>B29C 39/18</td>
</tr>
<tr>
<td>Coating a mould with inserts</td>
<td>B29C 41/30</td>
</tr>
<tr>
<td>Compression moulding with inserts</td>
<td>B29C 43/18</td>
</tr>
<tr>
<td>Foaming with inserts</td>
<td>B29C 44/12 - B29C 44/16</td>
</tr>
<tr>
<td>Injection moulding with inserts</td>
<td>B29C 45/14</td>
</tr>
<tr>
<td>Extrusion moulding with inserts</td>
<td>B29C 48/15</td>
</tr>
<tr>
<td>Blow moulding with labels</td>
<td>B29C 49/24 - B29C 49/26</td>
</tr>
</tbody>
</table>
B29C 70/682

{Preformed parts characterised by their structure, e.g. form}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Measures or configurations for obtaining anchoring effects in the contact areas between layers by mechanical anchoring | B29C 37/0078 |
| Measures or configurations for obtaining anchoring effects in the contact areas between layers by means of openings in the layers | B29C 37/0082 |

Special rules of classification

B29C 70/683

Mainly to improve bonding with the plastic material in which it is embedded

Illustrative example of subject matter classified in B29C 70/685:
Illustrative example of subject matter classified in B29C 70/686:

Illustrative example of subject matter classified in B29C 70/687:
Illustrative example of subject matter classified in B29C 70/688:

B29C 70/70

Completely encapsulating inserts {([B29C 70/86 takes precedence])}

References

Limiting references

This place does not cover:

| Reinforced encapsulating material (e.g. by fibres) | B29C 70/865 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Joining by foaming: | B29C 44/1223-B29C 44/1247 |
Special rules of classification

Illustrative example of subject matter classified in B29C 70/70:

Illustrative example of subject matter classified in B29C 70/72:
Illustrative example of subject matter classified in B29C 70/74:

Illustrative example of subject matter classified in B29C 70/742:

U.S. Patent

Aug. 19, 1997

Sheet 2 of 3

5,658,027
Illustrative example of subject matter classified in B29C 70/745:

EP 1 946 901 A1

Illustrative example of subject matter classified in B29C 70/747:

FIG. 4
Illustrative example of subject matter classified in B29C 70/763:

Illustrative example of subject matter classified in B29C 70/766:
Illustrative example of subject matter classified in B29C 70/78:

EP 0 001 187 A1

**FIG. 6B**

Illustrative example of subject matter classified in B29C 70/80:

EP 0021691

**Fig. 1**

**Fig. 2**

**Fig. 3**

EP0021691
Illustrative example of subject matter classified in **B29C 70/82**: 

![Diagram](image1)

**Fig. 2**

Illustrative example of subject matter classified in **B29C 70/84**: 

![Diagram](image2)

**FIG. 2**

![Diagram](image3)

**FIG. 3**
Illustrative example of subject matter classified in B29C 70/845:


Fig. 6

Illustrative example of subject matter classified in B29C 70/882:

DE 10 2008 044 208 A1 2010.06.10

Anhängende Zeichnungen
Illustrative example of subject matter classified in B29C 70/885:

EP 1 584 401 A1

FIG. 4

Illustrative example of subject matter classified in B29C 70/887:
B29C 71/00

After-treatment of articles without altering their shape; Apparatus therefor (B29C 44/56, B29C 73/00 take precedence; surface shaping B29C 59/00 {; for joined or sealed parts B29C 66/03; after-treatment specially adapted for vulcanising tyres B29D 30/0633})

Definition statement

This place covers:
After-treatment of articles without altering their shape e.g. extracting undesirable components (unreacted monomers, solvents) from articles e.g. using vacuum or gases, supercritical fluid; absorbing ingredients (drugs, flavourings) in the wall of articles.

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>After-treatment of articles shaped by internal pressure generated in the material</td>
<td>B29C 44/56</td>
</tr>
<tr>
<td>Surface shaping, e.g. embossing</td>
<td>B29C 59/00</td>
</tr>
<tr>
<td>Repairing of articles</td>
<td>B29C 73/00</td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical treatment or coating of shaped articles made of macromolecular substances</td>
<td>C08J 7/00</td>
</tr>
</tbody>
</table>

B29C 71/009

{using liquids, e.g. solvents, swelling agents (spectacle cases, e.g. for cleaning contact lenses A45C 11/04; disinfecting or sterilising contact lenses A61L 12/00, using liquid substances A61L 2/20; cleaning involving the use of liquid in general B08B 3/00; for hydrating contact lenses B29D 11/00067)}

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning by methods involving the use or presence of liquid or steam, cleaning involving contact with liquid</td>
<td>B08B 3/04</td>
</tr>
<tr>
<td>Cleaning by liquid gases or supercritical fluids</td>
<td>B08B 7/0021</td>
</tr>
<tr>
<td>Producing contact lenses; hydrating contact lenses</td>
<td>B29D 11/00067</td>
</tr>
<tr>
<td>Chemical treatment or coating of shaped articles made of macromolecular substances; with solvents, e.g. swelling agents</td>
<td>C08J 7/02</td>
</tr>
</tbody>
</table>
B29C 71/0063
{for changing crystallisation}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Producing flat articles; films or sheets | B29D 7/01 |
| Manufacture of articles or shaped materials containing macromolecular substances; manufacture of films or sheets | C08J 5/18 |

B29C 71/0072
{for changing orientation}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Heating or cooling the stream of extruded material | B29C 48/88 |
| Producing flat articles; films or sheets | B29D 7/01 |
| Manufacture of articles or shaped materials containing macromolecular substances; manufacture of films or sheets | C08J 5/18 |

B29C 71/009
{using gases without chemical reaction (C08J 7/12 takes precedence; in combination with blow-moulding B29C 49/46; surface treatment using plasma B29C 59/14, ionised gas B29C 59/16)}

References
Limiting references
This place does not cover:

| Cleaning by liquid gases or supercritical fluids | B08B 7/0021 |

B29C 71/02
Thermal after-treatment {{B29C 71/0063 and B29C 71/0072 take precedence}}

Definition statement
This place covers:
annealing, i.e. reducing or eliminating tensions; quenching; tempering; stabilisation against shrinkage (by reducing tensions)
References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating or cooling the stream of extruded material</td>
<td>B29C 48/88</td>
</tr>
<tr>
<td>Processes for manufacturing semi-permeable membranes; after-treatment of</td>
<td>B01D 67/0083</td>
</tr>
<tr>
<td>organic or inorganic membranes; thermal after-treatment</td>
<td></td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producing flat articles; films or sheets</td>
<td>B29D 7/01</td>
</tr>
<tr>
<td>Manufacture of articles or shaped materials containing macromolecular</td>
<td>C08J 5/18</td>
</tr>
<tr>
<td>substances; manufacture of films or sheets</td>
<td></td>
</tr>
</tbody>
</table>

B29C 71/04

by wave energy or particle radiation { e.g. for curing or vulcanising preformed articles (during moulding, e.g. in a mould B29C 35/08)}

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processes of treating or compounding macromolecular substances; treatment</td>
<td>C08J 3/28</td>
</tr>
<tr>
<td>by wave energy or particle radiation</td>
<td></td>
</tr>
<tr>
<td>Chemical treatment or coating of shaped articles made of macromolecular</td>
<td>C08J 7/123</td>
</tr>
<tr>
<td>substances; chemical modification; treatment by wave energy or particle</td>
<td></td>
</tr>
<tr>
<td>radiation</td>
<td></td>
</tr>
<tr>
<td>Apparatus or processes for manufacturing printed circuits; etching the</td>
<td>H05K 3/0041</td>
</tr>
<tr>
<td>insulating substrate by plasma etching</td>
<td></td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods or apparatus for disinfecting or sterilising materials or objects</td>
<td>A61L 2/08</td>
</tr>
<tr>
<td>using physical phenomena; radiation</td>
<td></td>
</tr>
<tr>
<td>Irradiation devices</td>
<td>G21K 5/00</td>
</tr>
</tbody>
</table>
B29C 73/00

Repairing of articles made from plastics or substances in a plastic state, e.g. of articles shaped or produced by using techniques covered by this subclass or subclass B29D ((linings for tyres acting locally B60C 5/142; retreading tyres B29D 30/54; devices for covering leaks in pipes or hoses F16L 55/16))

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieving, screening; repairing of screening surfaces</td>
<td>B07B 1/4627</td>
</tr>
<tr>
<td>Repairing fractures or cracked metal parts or products, e.g. castings</td>
<td>B23P 6/04</td>
</tr>
<tr>
<td>Rebuilding ships, e.g. increasing tonnage</td>
<td>B63B 83/00</td>
</tr>
<tr>
<td>Designing, manufacturing, assembling, cleaning, maintaining, or repairing aircraft</td>
<td>B64F 5/40</td>
</tr>
<tr>
<td>Materials for sealing or packing joints or covers</td>
<td>C09K 3/10</td>
</tr>
<tr>
<td>Blades, blades-carrying members; repairing methods or devices</td>
<td>F01D 5/005</td>
</tr>
</tbody>
</table>

B29C 73/02

using liquid or paste-like material (B29C 73/16 takes precedence)

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Repairing damaged coatings | B05D 5/005 |
B29C 73/025
{fed under pressure}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Layered products essentially comprising sheet glass; repairing layered products containing glass and synthetic resin layers (e.g. windshields)  B32B 17/10963
B29C 73/04

using preformed elements

Definition statement

This place covers:
B29C 73/06

using plugs sealing in the hole

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Devices for recovering leaks in pipes or hoses; by means of a plug

B29C 73/06

{expandable}

Definition statement

This place covers:
B29C 73/066

{by mechanical means provided on the plug}

Definition statement

This place covers:
B29C 73/08
Apparatus therefor, e.g. for inserting

Definition statement

*This place covers:*

---

**FIG. 1**
Prior Art

**FIG. 2**
Prior Art

**FIG. 3**

**FIG. 4**

**FIG. 5**
B29C 73/10

using patches sealing on the surface of the article (B29C 73/14 takes precedence)

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Designing, manufacturing, assembling, cleaning, maintaining, or repairing aircraft | B64F 5/40 |
| Working measures on existing buildings; repairing, e.g. filling cracks | E04G 23/02 |
Working measures on existing buildings; repairing, e.g. filling cracks; arrangements for filling cracks or cavities in building constructions

Repairing or joining pipes on or under water

Devices for recovering leaks in pipes or hoses

Devices for recovering leaks in pipes or hoses; from outside the pipe

Devices for recovering leaks in pipes or hoses; from outside the pipe; by means of a parch which is fixed on the wall of the pipe by means of an adhesive, a weld or the like

**B29C 73/105**

{provided with a centering element}

**Definition statement**

*This place covers:*

---

**FIG. 1**

---

**FIG. 2**
**B29C 73/12**

Apparatus therefor, e.g. for applying (B29C 73/30 takes precedence)

**Definition statement**

*This place covers:*

[Diagram images]
B29C 73/14

using elements composed of two parts joined together after having been placed one on each side of the article

Definition statement

This place covers:
B29C 73/16

Auto-repairing or self-sealing arrangements or agents {(incorporating auto-repairing or self-sealing arrangements or agents on or into tyres B29D 30/0685)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Producing pneumatic or solid tyres; retreading</th>
<th>B29D 30/54</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tyres characterised by the chemical composition or the physical arrangement or mixture of the composition; composition of the inner liner</td>
<td>B60C 1/0008</td>
</tr>
</tbody>
</table>
**B29C 73/16**

<table>
<thead>
<tr>
<th>Inflatable pneumatic tyres; without separate inflatable inserts; with impervious liner or coating on the inner wall of the tyre</th>
<th>B60C 5/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linings therefor acting locally</td>
<td>B60C 5/142</td>
</tr>
<tr>
<td>Tyres parts or constructions; puncture preventing arrangements</td>
<td>B60C 19/12</td>
</tr>
<tr>
<td>Tyres parts or constructions; puncture preventing arrangements; disposed between the inner chamber and the tyre</td>
<td>B60C 19/122</td>
</tr>
<tr>
<td>Tyres parts or constructions; puncture preventing arrangements; disposed removable on the tyre</td>
<td>B60C 19/125</td>
</tr>
</tbody>
</table>

**B29C 73/163**

**{Sealing compositions or agents, e.g. combined with propellant agents}**

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Tyres parts or constructions; puncture preventing arrangements | B60C 19/12 |
| Tyres parts or constructions; puncture preventing arrangements; disposed between the inner chamber and the tyre | B60C 19/122 |
| Tyres parts or constructions; puncture preventing arrangements; disposed removable on the tyre | B60C 19/125 |
| Materials for stopping leaks, e.g. in radiators, in tanks | C09K 3/12 |
B29C 73/166

{Devices or methods for introducing sealing compositions into articles}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrangements for tyre-inflating valves to tyres or rims; accessories</td>
<td>B60C 29/062</td>
</tr>
<tr>
<td>for tyre-inflating valves; for filling a tyre with, or removing from a tyre,</td>
<td></td>
</tr>
<tr>
<td>particular materials, e.g. liquids</td>
<td></td>
</tr>
<tr>
<td>Servicing, maintaining, repairing or retrofitting of vehicles; supplying</td>
<td>B60S 5/04</td>
</tr>
<tr>
<td>air for tyre inflation</td>
<td></td>
</tr>
<tr>
<td>Characterised by the inflation control means or the drive of the air</td>
<td>B60S 5/043</td>
</tr>
<tr>
<td>pressure system</td>
<td></td>
</tr>
<tr>
<td>Using electrical or electronical means</td>
<td>B60S 5/046</td>
</tr>
</tbody>
</table>
the article material itself being self-sealing, e.g. by compression

Definition statement

This place covers:
B29C 73/20

the article material only consisting in part of a deformable sealing material

Definition statement

This place covers:
B29C 73/22

the article containing elements including a sealing composition, e.g. powder being liberated when the article is damaged

Definition statement

This place covers:
B29C 73/26
for mechanical pretreatment

Definition statement

This place covers:
B29C 73/28
for clamping and stretching flexible material, e.g. inner tubes

Definition statement
This place covers:
**B29C 73/30**

for local pressing or local heating

**Definition statement**

*This place covers:*
B29C 73/305

{specially adapted for toroidal articles, e.g. tyres (B29C 73/325 takes precedence)}

Definition statement

This place covers:
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Tools for repairing damaged tyres | B60C 25/16 |

B29C 73/32

using an elastic element, e.g. inflatable bag

Definition statement

This place covers:
**B29C 73/325**

{specially adapted for toroidal articles, e.g. tyres}

**Definition statement**

*This place covers:*
B29C 73/34
for local heating

Definition statement

This place covers: