

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

### SHAPING

## B29 WORKING OF PLASTICS; WORKING OF SUBSTANCES IN A PLASTIC STATE, IN GENERAL (processing doughs [A21C](#); working chocolate [A23G](#); casting of metals [B22](#); working cement, clay [B28](#); chemical aspects, see section [C](#), particularly [C08](#); working glass [C03B](#); 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](#))

(NOTES omitted)

## B29D PRODUCING PARTICULAR ARTICLES FROM PLASTICS OR FROM SUBSTANCES IN A PLASTIC STATE (making granules [B29B 9/00](#); making preforms [B29B 11/00](#))

|                |  |          |           |  |
|----------------|--|----------|-----------|--|
| <b>1/00</b>    | <b>Producing articles with screw-threads</b>   | 11/00096 | . . .     | {for delivering compositions, e.g. drugs to the eye}   |
| 1/005          | . {fibre reinforced}   | 11/00105 | . . .     | {covering a large part of the cornea}  |
| <b>5/00</b>    | <b>Producing elements of slide fasteners; Combined making and attaching of elements of slide fasteners</b>   | 11/00115 | . . .     | {made by rotational casting}   |
| 5/02           | . the fasteners having separate interlocking members   | 11/00125 | . . .     | {Auxiliary operations, e.g. removing oxygen from the mould, conveying moulds from a storage to the production line in an inert atmosphere} |
| 5/04           | . the interlocking members being formed by continuous meander of filamentary material  | 11/00134 | . . . .   | {Curing of the contact lens material}  |
| 5/06           | . the interlocking members being formed by continuous helix  | 11/00144 | . . . .   | {wherein the lens material is not fully polymerized, e.g. by leaving an unpolymerized volume}  |
| 5/08           | . the interlocking members being formed by profiled or castellated edge of a stringer  | 11/00153 | . . . .   | {Differential curing, e.g. by differential radiation}  |
| 5/10           | . the interlocking members being formed by continuous profiled strip   | 11/00163 | . . . . . | {Movable masks or shutters, e.g. to vary the exposure}   |
| <b>7/00</b>    | <b>Producing flat articles, e.g. films or sheets</b><br>( <a href="#">B29D 24/00</a> takes precedence)   | 11/00173 | . . . .   | {Conveying moulds}   |
| 7/01           | . Films or sheets  | 11/00182 | . . . .   | {using carrier plates}   |
| <b>2009/00</b> | <b>IPC7 Producing layered products</b>   | 11/00192 | . . . .   | {Demoulding, e.g. separating lenses from mould halves}   |
| <b>11/00</b>   | <b>Producing optical elements, e.g. lenses or prisms</b><br>(grinding or polishing of optical elements <a href="#">B24B</a> ;<br>constructional form of optical elements <a href="#">G02B</a> ;<br>{optical parts of spectacles <a href="#">G02C 7/00</a> }) | 11/00201 | . . . . . | {using cooling means}  |
| 11/00009       | . {Production of simple or compound lenses}  | 11/00211 | . . . . . | {using heating means}  |
| 11/00019       | . . {with non-spherical faces, e.g. toric faces}   | 11/00221 | . . . . . | {using prying means}   |
| 11/00028       | . . {Bifocal lenses; Multifocal lenses}  | 11/0023  | . . . .   | {Transferring contact lenses}  |
| 11/00038       | . . {Production of contact lenses}   | 11/0024  | . . . . . | {using a vacuum suction gripper}   |
| 11/00048       | . . . {composed of parts with dissimilar composition ( <a href="#">B29D 11/00057</a> takes precedence)}  | 11/0025  | . . . .   | {Removing impurities from contact lenses, e.g. leaching}   |
| 11/00057       | . . . {characterised by the shape or surface condition of the edge, e.g. flashless, burrless, smooth}  | 11/00259 | . . .     | {Plants for the production of contact lenses}  |
| 11/00067       | . . . {Hydrating contact lenses}   | 11/00269 | . .       | {Fresnel lenses}   |
| 11/00076       | . . . {enabling passage of fluids, e.g. oxygen, tears, between the area under the lens and the lens exterior}  | 11/00278 | . .       | {Lenticular sheets ( <a href="#">B29D 11/00269</a> takes precedence)}  |
| 11/00086       | . . . {methods for matching the anterior surface of the contact lens to the shape of an eyeball}   | 11/00288 | . . .     | {made by a rotating cylinder}  |
|                |  | 11/00298 | . . .     | {Producing lens arrays}  |
|                |  | 11/00307 | . . .     | {Producing lens wafers}  |
|                |  | 11/00317 | . .       | {Production of lenses with markings or patterns}   |
|                |  | 11/00326 | . . .     | {having particular surface properties, e.g. a micropattern}  |
|                |  | 11/00336 | . . . .   | {by making depressions in the lens surfaces}   |
|                |  | 11/00346 | . . .     | {having nanosize structures or features, e.g. fillers}   |

- 11/00355 . . {with a refractive index gradient}
  - 11/00365 . . {Production of microlenses ([lenticular sheets B29D 11/00278](#))}
  - 11/00375 . . . {by moulding lenses in holes through a substrate}
  - 11/00384 . . . {Local shaping by heating, e.g. local irradiation causing expansion}
  - 11/00394 . . . {Producing solid immersion lenses [SIL]}
  - 11/00403 . . {Producing compound lenses}
  - 11/00413 . . {made by moulding between two mould parts which are not in direct contact with one another, e.g. comprising a seal between or on the edges ([B29D 11/00019](#) - [B29D 11/00355](#), [B29D 11/00423](#), [B29D 11/00432](#) take precedence)}
  - 11/00423 . . {Plants for the production of simple or compound lenses ([B29D 11/00259](#) takes precedence)}
  - 11/00432 . . {Auxiliary operations, e.g. machines for filling the moulds ([B29D 11/00125](#) takes precedence)}
  - 11/00442 . . . {Curing the lens material}
  - 11/00451 . . . {Changing a shape by remelting}
  - 11/00461 . . . {Adjusting the refractive index, e.g. after implanting}
  - 11/00471 . . {made by rotational casting ([B29D 11/00115](#) takes precedence)}
  - 11/0048 . . {Moulds for lenses ([moulds for plastic articles in general B29C 33/00](#))}
  - 11/0049 . . . {Double sided moulds}
  - 11/005 . . . {having means for aligning the front and back moulds}
  - 11/00509 . . . . {to make toric lenses}
  - 11/00519 . . . {Reusable moulds}
  - 11/00528 . . . {Consisting of two mould halves joined by an annular gasket}
  - 11/00538 . . . {Feeding arrangements}
  - 11/00548 . . . {with surfaces formed by films}
  - 11/00557 . . . {with deformable mould walls, e.g. to make lenses with different shapes}
  - 11/00567 . . . {wherein the mould forms part of the final package for lenses}
  - 11/00576 . . . {with means to engage flash, e.g. HEMA ring}
  - 11/00586 . . . . {and removing the flash or HEMA ring}
  - 11/00596 . {Mirrors}
  - 11/00605 . {Production of reflex reflectors}
  - 11/00615 . . {moulded by partially embedding reflective elements, e.g. glass beads, into the surface of a support, e.g. to make prefabricated road markings ([dispensing reflective beads on road markings in situ E01C 23/163](#))}
  - 11/00625 . . {Moulds for reflex reflectors ([moulds for plastic articles in general B29C 33/00](#))}
  - 11/00634 . {Production of filters}
  - 11/00644 . . {polarizing}
  - 11/00653 . . {photochromic}
  - 11/00663 . {Production of light guides}
  - 11/00673 . . {Supports for light guides}
  - 11/00682 . . {with a refractive index gradient}
  - 11/00692 . . {combined with lenses}
  - 11/00701 . . {having an intermediate layer between core and cladding}
  - 11/00711 . . {by shrinking the sleeve or cladding onto the core}
  - 11/00721 . . {involving preforms for the manufacture of light guides}
  - 11/0073 . {Optical laminates}
- NOTE**
- Classification in this group must be supplemented, in so far as any product is concerned, by classification in [B32B](#)
- 11/0074 . . {Production of other optical elements not provided for in [B29D 11/00009](#)- [B29D 11/0073](#)}
  - 11/0075 . . . {Connectors for light guides}
  - 11/00759 . . . {Branching elements for light guides}
  - 11/00769 . . . {Producing diffraction gratings}
  - 11/00778 . . . {Producing hyperlenses, superlenses or "perfect" lenses}
  - 11/00788 . . . {Producing optical films}
  - 11/00798 . . . {Producing diffusers}
  - 11/00807 . . . {Producing lenses combined with electronics, e.g. chips}
  - 11/00817 . . . . {Producing electro-active lenses or lenses with energy receptors, e.g. batteries or antennas}
  - 11/00826 . . . . . {with energy receptors for wireless energy transmission}
  - 11/00836 . . . {Producing non-circular, e.g. elliptic lenses}
  - 11/00846 . . . {Producing zero power lenses}
  - 11/00855 . . . {Producing cylindrical lenses}
  - 11/00865 . . {Applying coatings; tinting; colouring ([printing, marking or copying processes B41M](#); [identification in general G09F 3/00](#); [producing decorative effects in general B44C](#); [positioning or marking of lenses B24B 13/0055](#))}
  - 11/00875 . . . {on light guides}
  - 11/00884 . . . {Spin coating}
  - 11/00894 . . . {colouring or tinting}
  - 11/00903 . . . . {on the surface}
  - 11/00913 . . . . {full body; edge-to-edge}
  - 11/00923 . . . {on lens surfaces for colouring or tinting ([printing or marking in general B41M](#))}
  - 11/00932 . . {Combined cutting and grinding thereof}
  - 11/00942 . . . {where the lens material is mounted in a support for mounting onto a cutting device, e.g. a lathe, and where the support is of machinable material, e.g. plastics}
  - 11/00951 . . {Measuring, controlling or regulating}
  - 11/00961 . . . {using microprocessors or computers}
  - 11/00971 . . . . {using CNC machining to make mould surfaces}
  - 11/0098 . . . {Inspecting lenses}
  - 11/0099 . . . . {while still attached to the mould}
  - 11/02 . . Artificial eyes from organic plastic material ([implantable eye parts, artificial eyes A61F 2/14](#))}
  - 11/023 . . . {Implants for natural eyes}
  - 11/026 . . . . {Comprising more than one lens}
- 12/00**    **Producing frames**
- 12/02 . . Spectacle frames ([constructional form G02C](#))
- 15/00**    **Producing gear wheels or similar articles with grooves or projections, e.g. control knobs**
- 16/00**    **Producing articles with corrugations ([B29D 23/18](#) takes precedence)**

- 17/00 Producing carriers of records containing fine grooves or impressions, e.g. disc records for needle playback, cylinder records (recording sound or other information using formed grooves or the equivalent G11B); Producing record discs from master stencils**
- 17/002 . {Producing phonograph records}
  - 17/005 . {Producing optically read record carriers, e.g. optical discs}
  - 17/007 . . {Forming the relief pattern on a support larger than the record}
- 19/00 Producing buttons or semi-finished parts of buttons**
- 19/04 . by cutting, milling, turning, stamping, or perforating moulded parts; Surface treatment of buttons
  - 19/06 . . Devices for feeding semi-finished parts to the processing machines
  - 19/08 . . Making holes in buttons or in semi-finished parts thereof
- 21/00 Producing hair combs or similar toothed or slotted articles**
- 21/04 . by sawing, milling, cutting, or similar operations
  - 21/06 . Polishing
- 22/00 Producing hollow articles (tubular articles B29D 23/00; pneumatic tyres B29D 30/00)**
- 22/003 . {Containers for packaging, storing or transporting, e.g. bottles, jars, cans, barrels, tanks}
  - 22/006 . . {Hot water bottles}
  - 22/02 . Inflatable articles
  - 22/023 . . {Air springs; Air bellows (construction of fluid springs F16F 9/00)}
  - 22/026 . . {Ring shaped inner tubes with ends (endless inner tubes B29D 23/24)}
  - 22/04 . Spherical articles, e.g. balls (B29D 22/02 takes precedence)
- 23/00 Producing tubular articles (B29D 24/00 takes precedence)**
- 23/001 . {Pipes; Pipe joints (pleated hoses B29D 23/18)}
  - 23/003 . . {Pipe joints, e.g. straight joints}
  - 23/005 . . . {provided with electrical wiring}
  - 23/006 . . . {Elbows}
  - 23/008 . . . {T-joints}
  - 23/14 . Cigar or cigarette holders
  - 23/18 . Pleated {or corrugated} hoses
  - 23/20 . Flexible squeeze tubes, e.g. for cosmetics
  - 23/24 . Endless tubes, e.g. inner tubes for pneumatic tyres {(producing ring shaped inner tubes with ends B29D 22/026; inflatable inner tubes for tyres B60C 5/00)}
- 24/00 Producing articles with hollow walls {(B29D 99/0028 takes precedence)}**
- 24/001 . {formed of hollow ridges or ribs, e.g. separate ridges; continuous corrugated structure (B29D 24/008 takes precedence)}
  - 24/002 . {formed with structures, e.g. cores placed between two plates or sheets, e.g. partially filled (totally filled B29D 99/0021)}
  - 24/004 . . {the structure having vertical or oblique ribs}
  - 24/005 . . {the structure having joined ribs, e.g. honeycomb}
  - 24/007 . . . {and a chamfered edge}
- 24/008 . . {the structure having hollow ridges, ribs or cores}
- 25/00 Producing frameless domes**
- 28/00 Producing nets or the like, {e.g. meshes, lattices} (by knotting D04G)**
- 28/005 . {Reticulated structure comprising reinforcements of substantial or continuous length}
- 29/00 Producing belts or bands**
- 29/06 . Conveyor belts
  - 29/08 . Toothed driving belts
  - 29/085 . . {Double-toothed driving belts}
  - 29/10 . Driving belts having wedge-shaped cross-section
  - 29/103 . . {Multi-ribbed driving belts}
  - 29/106 . . {Cogged driving belts}
- 30/00 Producing pneumatic or solid tyres or parts thereof (producing inner tubes B29D 23/24; constructional form of tyres or parts thereof B60C; connection of valves to inflatable elastic bodies B60C 29/00; testing of tyres G01M 17/02)**
- 30/005 . {Pretreatment of tyres or parts thereof, e.g. preheating, irradiation, precurcuring}
  - 2030/0011 . . {Surface activation of tyres or parts thereof, e.g. by plasma treatment}
  - 30/0016 . {Handling tyres or parts thereof, e.g. supplying, storing, conveying (B29D 30/2607 takes precedence; loading and unloading vulcanizing presses B29D 30/0603)}
  - 2030/0022 . . {Handling green tyres, e.g. transferring or storing between tyre manufacturing steps}
  - 2030/0027 . . {Handling cured tyres, e.g. transferring or storing after vulcanizing}
  - 2030/0033 . . {Rotating tyres or their components, e.g. carcasses, belt-tread packages, beads and the like, around their axis, i.e. for preventing deformation}
  - 2030/0038 . . {Handling tyre parts or semi-finished parts, excluding beads, e.g., storing, transporting, transferring (B29D 2030/0044 takes precedence)}
  - 2030/0044 . . {Handling tyre beads, e.g., storing, transporting, transferring and supplying to the toroidal support or to the drum}
  - 30/005 . {General arrangement or lay-out of plants for the processing of tyres or parts thereof (round cores or cylindrical drums arranged for a single sequence of tire building operations B29D 30/10, B29D 30/20; vulcanization presses B29D 30/0601)}
  - 2030/0055 . . {Optimization of the cycle times of the tyre manufacturing process, e.g. adaptation of the tyre building process to the vulcanization process}
  - 30/0061 . {Accessories, details or auxiliary operations not otherwise provided for}
  - 2030/0066 . . {Tyre quality control during manufacturing}
  - 2030/0072 . . {Attaching fasteners to tyres, e.g. patches, in order to connect devices to tyres}
  - 2030/0077 . . {Directly attaching monitoring devices to tyres before or after vulcanization, e.g. microchips}
  - 2030/0083 . . {Attaching monitoring devices to tyres before or after vulcanization by inserting them inside tyre cavities}
  - 2030/0088 . . {Adaptive tyres, i.e. the properties of the tyres, e.g. the stiffness, being changeable during use}
  - 2030/0094 . . {Tyres been capable of generating, e.g. recovering, energy}
  - 30/02 . Solid tyres {; Moulds therefor}

**B29D**

- 30/04 . . . Resilient fillings for rubber tyres; Filling tyres therewith
- 30/06 . . . Pneumatic tyres or parts thereof {(e.g. produced by casting, moulding, compression moulding, injection moulding, centrifugal casting)}
- 30/0601 . . . {Vulcanising tyres; Vulcanising presses for tyres}
- 30/0602 . . . {the vulcanising medium being in direct contact with the tyre}
- 30/0603 . . . {Loading or unloading the presses}
- 30/0605 . . . {Vulcanising presses characterised by moulds integral with the presses having radially movable sectors}
- 30/0606 . . . {Vulcanising moulds not integral with vulcanising presses (for solid tyres [B29D 30/02](#))}
- 2030/0607 . . . . {Constructional features of the moulds (moulds or cores in general [B29C 33/00](#))}
- 2030/0609 . . . . {the moulds being made of a plurality of laminations, e.g. thin plates, adjacent one another, so as to create the moulding cavity}
- 2030/061 . . . . {Means for forming passages under the tread surface, e.g. undercuts, holes, channels, grooves}
- 2030/0612 . . . . {Means for forming recesses or protrusions in the tyres, e.g. grooves or ribs, to create the tread or sidewalls patterns}
- 2030/0613 . . . . {Means, e.g. sipes or blade-like elements, for forming narrow recesses in the tyres, e.g. cuts or incisions for winter tyres}
- 2030/0614 . . . . {porous moulds, e.g. sintered materials (porous moulds in general [B29C 33/3814](#))}
- 2030/0616 . . . . {Surface structure of the mould, e.g. roughness, arrangement of slits, grooves or channels}
- 2030/0617 . . . . {Venting devices, e.g. vent plugs or inserts}
- 2030/0618 . . . . {Annular elements, e.g. rings, for moulding the tyre shoulder areas}
- 2030/062 . . . . {Means for sealing the tyre against the mould in the bead areas}
- 2030/0621 . . . . {to seal the bead portions against the mould i.e. by using pressing devices}
- 2030/0622 . . . . {the pressing devices being collapsable, e.g. annular elements consisting of a plurality of sectors}
- 2030/0623 . . . . {the pressing devices being flexible, e.g. annular elements being relatively elastic and deformable}
- 2030/0625 . . . . {the pressing devices being substantially rigid}
- 2030/0626 . . . . {the pressing devices being one-piece devices}
- 2030/0627 . . . . {the pressing devices being ring-shaped}
- 30/0629 . . . . {with radially movable sectors}
- 2030/063 . . . . {the moulds being split in upper and lower halves}
- 2030/0631 . . . . {Means for forcing adjacent mould sectors away one from another, e.g. using springs or the like, to create repulsive forces}
- 30/0633 . . . {After-treatment specially adapted for vulcanising tyres}
- 2030/0634 . . . . {Measuring, calculating, correcting tyre uniformity, e.g. correcting RFV}
- 2030/0635 . . . . {Measuring and calculating tyre uniformity, e.g. using mathematical methods}
- 2030/0637 . . . . {Correcting by adding material}
- 2030/0638 . . . . {Correcting by removing material, e.g. by grinding}
- 2030/0639 . . . . {Correcting by heat treatments}
- 2030/0641 . . . . {Correcting by restraining tyre deformation}
- 2030/0642 . . . . {Correcting by stretching}
- 30/0643 . . . . {Cooling during post cure inflation; Post cure inflators used therefor}
- 30/0645 . . . {Devices for inserting vulcanising cores, i.e. bladders, into the tyres; Closing the press in combination herewith}
- 2030/0646 . . . . {Attaching to, or removing the vulcanizing cores or bladders from the center mechanisms}
- 2030/0647 . . . . {Supporting or transferring tyres using an assembly of a bladder and side rings}
- 30/0649 . . . {Devices for removing vulcanising cores, i.e. bladders, from the tyres; Opening the press in combination herewith}
- 30/065 . . . {Tyre-vulcanising presses with two or more moulds, e.g. stacked upon each other}
- 2030/0651 . . . . {the moulds being arranged side by side, or in a circle}
- 2030/0653 . . . . {Exchanging moulds in the presses}
- 30/0654 . . . {Flexible cores therefor, e.g. bladders, bags, membranes, diaphragms (elastic cores or mandrels for shaping of plastics [B29C 33/505](#); bags for isostatic pressing in compression moulding [B29C 43/12](#), [B29C 43/3642](#))}
- 2030/0655 . . . . {Constructional or chemical features of the flexible cores}
- 2030/0657 . . . . {Removing the vulcanizing media from the flexible cores, e.g. draining or evacuating}
- 2030/0658 . . . . {Venting devices for the flexible cores}
- 2030/0659 . . . . {Details or accessories for the flexible cores not otherwise provided for}
- 30/0661 . . . {Rigid cores therefor, e.g. annular or substantially toroidal cores (cores for building tyres [B29D 30/12](#); drums for building tyres [B29D 30/24](#))}
- 30/0662 . . . {Accessories, details or auxiliary operations}
- 2030/0663 . . . . {Mould maintenance, e.g. cleaning, washing, repairing}
- 2030/0665 . . . . {Measuring, calculating and correcting tyre uniformity before vulcanization}
- 2030/0666 . . . . {Heating by using fluids (heating, cooling or curing using liquids, gas or steam [B29C 35/04](#))}
- 2030/0667 . . . . {Circulating the fluids, e.g. introducing and removing them into and from the moulds; devices therefor}
- 2030/0669 . . . . {the fluids being circulated by a turbine type pump associated with the mould, e.g. positioned in the mould}
- 2030/067 . . . . {the vulcanizing fluids being gases or vapours}

**B29D**

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| 2030/0671 | . . . . . | { the vulcanizing fluids being liquids }   | 30/10     | . . . . . | on round cores, i.e. the shape of the core is approximately identical with the shape of the completed tyre  |
| 2030/0673 | . . . . . | { the vulcanizing fluids being combinations of different kinds of fluids, e.g. steam and nitrogen }  | 2030/105  | . . . . . | { the cores being movable }   |
| 2030/0674 | . . . . . | { Heating by using non-fluid means, e.g. electrical heating }  | 30/12     | . . . . . | Cores   |
| 2030/0675 | . . . . . | { Controlling the vulcanization processes }  | 30/14     | . . . . . | Rolling-down or pressing-down the layers in the building process  |
| 2030/0677 | . . . . . | { Controlling temperature differences }  | 30/16     | . . . . . | Applying the layers; Guiding or stretching the layers during application <a href="#">{(applying tread bands to carcasses B29D 30/58; retreading B29D 30/54)}</a>  |
| 30/0678   | . .       | { Injection moulding specially adapted for tyres or parts thereof <a href="#">(injection moulding in general B29C 45/00)</a> }   | 30/1607   | . . . . . | { by feeding a sheet perpendicular to the core axis and joining the ends to form an annular element <a href="#">(bending sheets and joining the edges B29C 53/42)</a> }   |
| 30/0679   | . .       | { Centrifugal casting specially adapted for tyres or parts thereof <a href="#">(centrifugal casting in general B29C 39/08)</a> }   | 30/1614   | . . . . . | { by sliding a preformed tubular layer over the core }  |
| 30/0681   | . .       | { Parts of pneumatic tyres; accessories, auxiliary operations }  | 30/1621   | . . . . . | { by feeding a continuous band and winding it spirally, i.e. the band is fed without relative movement along the core axis, to form an annular element <a href="#">(winding and joining, spirally in general B29C 53/562)</a> } |
| 2030/0682 | . . .     | { Inner liners <a href="#">(tubeless tyres with impervious liner or coating on the tyre B60C 5/14)</a> }   | 30/1628   | . . . . . | { by feeding a continuous band and winding it helically, i.e. the band is fed while being advanced along the core axis, to form an annular element <a href="#">(winding and joining, helically in general B29C 53/58)</a> }     |
| 2030/0683 | . . .     | { Additional internal supports to be positioned inside the tyre, as emergency supports for run-flat tyres }  | 30/1635   | . . . . . | { by feeding a continuous band and moving it back and forth (zig-zag) to form an annular element }  |
| 30/0685   | . . .     | { Incorporating auto-repairing or self-sealing arrangements or agents on or into tyres <a href="#">(auto-repairing or self-sealing arrangements or agents B29C 73/16; puncture preventing arrangements B60C 19/12)</a> } | 30/1642   | . . . . . | { by feeding cut-to-length pieces in a direction perpendicular to the core axis and in a plane parallel to the core axis, and placing the pieces side-by-side to form an annular element }                                      |
| 2030/0686 | . . . . . | { Incorporating sealants on or into tyres not otherwise provided for; auxiliary operations therefore, e.g. preparation of the tyre }   | 30/165    | . . . . . | { by feeding cut-to-length pieces in a direction parallel to the core axis and placing the pieces side-by-side to form an annular element }   |
| 2030/0687 | . . . . . | { by incorporating the sealant into one chamber, e.g. bag, cell, tube or closed cavity }   | 30/1657   | . . . . . | { by feeding cut-to-length pieces in a direction inclined with respect to the core axis and placing the pieces side-by-side to form an annular element }  |
| 2030/0689 | . . . . . | { by incorporating the sealant into a plurality of chambers, e.g. bags, cells, tubes or closed cavities }  | 2030/1664 | . . . . . | { Details, accessories or auxiliary operations not provided for in the other subgroups of <a href="#">B29D 30/00</a> }  |
| 2030/069  | . . . . . | { through the use of a cylindrical support, e.g. a drum }  | 2030/1671 | . . . . . | { Venting air inclusions during the layer applications, e.g. by creating grooves, channels, passages, holes in the band-like tire component to be applied }   |
| 2030/0691 | . . . . . | { through the use of a toroidal support, e.g. a core, a part of the tyre or an inner tube }  | 2030/1678 | . . . . . | { the layers being applied being substantially continuous, i.e. not being cut before the application step }   |
| 2030/0693 | . . . . . | { the sealant being in the form of discrete particles, e.g. spheres or balls, filled with sealant }  | 2030/1685 | . . . . . | { the layers being applied being already cut to the appropriate length, before the application step }   |
| 2030/0694 | . . . . . | { the sealant being in the form of one or more narrow strips, e.g. applied by winding into the interior of the tyre }  | 2030/1692 | . . . . . | { Changing the orientation of the layers, e.g. plies, to be applied }   |
| 2030/0695 | . . . . . | { the sealant being in the form of one wide strip, e.g. a patch }  | 30/18     | . . . . . | Fitting the bead-rings or bead-cores; Folding the textile layers around the rings or cores  |
| 2030/0697 | . . . . . | { the sealant being in liquid form, e.g. applied by spraying }   | 30/20     | . . . . . | by the flat-tyre method, i.e. building on cylindrical drums   |
| 2030/0698 | . . . . . | { the sealant being applied by injection, e.g. introducing the sealant through a hole }  | 2030/201  | . . . . . | { Manufacturing run-flat tyres }  |
| 30/08     | . .       | Building tyres   |           |           |   |
| 2030/082  | . . .     | { Optimizing the deposition of the layers on the tyre building support, e.g. by using mathematical methods }   |           |           |   |
| 2030/084  | . . .     | { Placing two side portions of the tyre into the mould and introducing, e.g. by extrusion or injection moulding, the tread material to create the toroidal tyre }  |           |           |   |
| 2030/086  | . . .     | { Building the tyre carcass by combining two or more sub-assemblies, e.g. two half-carcasses }   |           |           |   |
| 2030/088  | . . .     | { by using a seamless tubular component, e.g. an inner liner, a carcass structure or a belt/breaker during tyre manufacturing on a core or a building drum }   |           |           |   |

**B29D**

|          |           |   |           |           |   |
|----------|-----------|---|-----------|-----------|---|
| 2030/202 | . . . .   | {the building drums being movable, i.e. not permanently connected to a fixed frame}   | 2030/2614 | . . . . . | {Bladders associated with the building drum, e.g. bladders used for the toroidal expansion, bladders for turning-up the plies}  |
| 2030/203 | . . . .   | {the fixtures supporting the cylindrical drums being non displaceable, i.e. substantially fixed to the floor}   | 2030/2621 | . . . . . | {Means for clamping bladders on the drum shoulders}   |
| 2030/204 | . . . .   | {the fixtures supporting the cylindrical drums, e.g. turrets, being displaceable, e.g. movable along a path, rail or the like}  | 2030/2628 | . . . . . | {Bladders for shaping the inner parts of the tyre beads or sidewalls}   |
| 2030/205 | . . . .   | {A single building drum being mounted on a fixture or supporting device, e.g. turret or turntable}  | 2030/2635 | . . . . . | {Central bladder, e.g. elastic membrane, sleeve, envelope, diaphragm, which covers the central portion of the drum, e.g. covering the toroidally expandable rigid segments}   |
| 2030/206 | . . . .   | {A plurality of building drums being mounted on a fixture or supporting device, e.g. turret or turntable}   | 2030/2642 | . . . . . | {Adjusting the diameter of the drum, to match its circumference with the length of ply}   |
| 2030/207 | . . . .   | {the drum supporting device being rotatable around a horizontal axis}   | 2030/265  | . . . . . | {Radially expandable and contractable drum comprising a set of circumferentially arranged elastic, flexible elements, e.g. blades or laminas, with or without expandable annular sleeve or bladder}                             |
| 2030/208 | . . . .   | {the drum supporting device being rotatable around a vertical axis}   | 2030/2657 | . . . . . | {Radially expandable and contractable drum comprising a set of circumferentially arranged rigid elements, e.g. fingers or arms}   |
| 2030/209 | . . . .   | {the drum supporting device being rotatable around an inclined axis}  | 2030/2664 | . . . . . | {the drum comprising at least two portions that are axially separable, e.g. the portions being supported by different shafts, e.g. in order to facilitate the insertion of the beads}   |
| 30/22    | . . . .   | Breaker plies being applied in the unexpanded state   | 2030/2671 | . . . . . | {Holding the layers, e.g. the webs or the plies, in position onto the drum}   |
| 30/24    | . . . .   | Drums   | 2030/2678 | . . . . . | {by using magnets}  |
| 2030/241 | . . . . . | {Auxiliary drums used for temporary storage of the layers before application to the building drums}   | 2030/2685 | . . . . . | {by using mechanical means, e.g. jaws, grippers, pressing bars}   |
| 30/242   | . . . . . | {for manufacturing substantially cylindrical tyre components without cores or beads, e.g. treads or belts}  | 2030/2692 | . . . . . | {by using suction means, e.g. vacuum producing devices}   |
| 30/243   | . . . . . | {and with mechanisms for folding layers}  | 30/28     | . . . .   | Rolling-down or pressing-down the layers in the building process  |
| 30/244   | . . . . . | {for manufacturing substantially cylindrical tyre components with cores or beads, e.g. carcasses ( <a href="#">mechanisms for folding layers around cores or blads per se B29D 30/32</a> )}   | 30/30     | . . . .   | Applying the layers; Guiding or stretching the layers during application ( <a href="#">applying tread bands to carcasses B29D 30/58; retreading B29D 30/54</a> )  |
| 30/245   | . . . . . | {Drums for the single stage building process, i.e. the building-up of the cylindrical carcass and the toroidal expansion of it are realised on the same drum ( <a href="#">expansion to a toroidal shape B29D 30/36</a> )}                                      | 30/3007   | . . . . . | {by feeding a sheet perpendicular to the drum axis and joining the ends to form an annular element ( <a href="#">bending sheets and joining the edges B29C 53/42</a> )}   |
| 30/246   | . . . . . | {Drums for the multiple stage building process, i.e. the building-up of the cylindrical carcass is realised on one drum and the toroidal expansion is realised after transferring on another drum ( <a href="#">expansion to a toroidal shape B29D 30/36</a> )} | 30/3014   | . . . . . | {by sliding a preformed tubular layer over the drum}  |
| 30/247   | . . . . . | {Arrangements for the first stage only, e.g. means for radially expanding the drum to lock the beads ( <a href="#">B29D 30/245 takes precedence</a> )}  | 30/3021   | . . . . . | {by feeding a continuous band and winding it spirally, i.e. the band is fed without relative movement along the drum axis, to form an annular element ( <a href="#">winding and joining, spirally in general B29C 53/562</a> )} |
| 30/248   | . . . . . | {Drums of the undercut type without toroidal expansion, e.g. with provisions for folding down the plies, for positioning the beads under the surface of the drum}   | 30/3028   | . . . . . | {by feeding a continuous band and winding it helically, i.e. the band is fed while being advanced along the drum axis, to form an annular element ( <a href="#">winding and joining, helically in general B29C 53/58</a> )}     |
| 30/26    | . . . . . | Accessories or details, e.g. membranes, transfer rings  | 30/3035   | . . . . . | {by feeding a continuous band and moving it back and forth (zig-zag) to form an annular element}  |
| 30/2607  | . . . . . | {Devices for transferring annular tyre components during the building-up stage, e.g. from the first stage to the second stage building drum}  |           |           |   |

- 30/3042 . . . . . {by feeding cut-to-length pieces in a direction perpendicular to the drum axis and in a plane parallel to the drum axis, and placing the pieces side-by-side to form an annular element}
- 30/305 . . . . . {by feeding cut-to-length pieces in a direction parallel to the drum axis and placing the pieces side-by-side to form an annular element}
- 30/3057 . . . . . {by feeding cut-to-length pieces in a direction inclined with respect to the drum axis and placing the pieces side-by-side to form an annular element}
- 2030/3064 . . . . . {Details, accessories and auxiliary operations not otherwise provided for}
- 2030/3071 . . . . . {Venting air inclusions during the layer applications, e.g. by creating grooves, channels, passages, holes in the band-like tyre component to be applied}
- 2030/3078 . . . . . {the layers being applied being substantially continuous, i.e. not being cut before the application step}
- 2030/3085 . . . . . {the layers being applied being already cut to the appropriate length, before the application step}
- 2030/3092 . . . . . {Changing the orientation of the layers, e.g. plies, to be applied}
- 30/32 . . . . . Fitting the bead-rings or bead-cores; Folding the textile layers around the rings or cores
- 2030/3207 . . . . . {Positioning the beads}
- 2030/3214 . . . . . {Locking the beads on the drum; details of the drum in the bead locking areas, e.g. drum shoulders}
- 2030/3221 . . . . . {Folding over means, e.g. bladders or rigid arms}
- 2030/3228 . . . . . {using one bladder acting on each side of the drum}
- 2030/3235 . . . . . {using two or more bladders acting on each side of the drum}
- 2030/3242 . . . . . {and with means for pressing the bladder against the ply material, e.g. bladder guide shoes, cages, arms}
- 2030/325 . . . . . {the means being radially expandable and contractible}
- 2030/3257 . . . . . {using pressing rollers}
- 2030/3264 . . . . . {using radially expandable, contractible mechanical means, e.g. circumferentially spaced arms, spring rollers, cages}
- 2030/3271 . . . . . {using air blasts}
- 2030/3278 . . . . . {Folding down the ends of the tubular tyre component, e.g. the carcass, over the drum shoulders}
- 2030/3285 . . . . . {Placing a cushioning element, e.g. a ring, aside or around the beads}
- 2030/3292 . . . . . {Interposing trap strips between beads and plies}
- 30/34 . . . . . by jointly covering two bead-rings, located parallel to each other at a distance apart, with fabric or cord layers
- 30/36 . . . . . Expansion of tyres in a flat form {, i.e. expansion to a toroidal shape independently of their building-up process}, e.g. of tyres built by the flat-tyres method or by jointly covering two bead-rings
- 30/38 . . . . . Textile inserts, e.g. cord or canvas layers, for tyres (making woven fabrics [D03D](#)); Treatment of inserts prior to building the tyre (pretreatment of inserts [B29B 15/00](#); manufacture of layers comprising fibrous parallel reinforcements of substantial or continuous length [B29C 70/20](#))
- 2030/381 . . . . . {the inserts incorporating reinforcing parallel cords; manufacture thereof}
- 2030/383 . . . . . {Chemical treatment of the reinforcing elements, e.g. cords, wires and filamentary materials, to increase the adhesion to the rubber (chemical pretreatment of the textile inserts [B29D 30/40](#); pretreatment of reinforcements [B29B 15/08](#); treating fibers, threads, yarns, fabrics in general [D06M 15/00](#))}
- 2030/385 . . . . . {made by winding and joining a continuous reinforced rubber band onto a mandrel, to obtain a tubular article as an intermediate element in the manufacture of the insert}
- 2030/386 . . . . . {the tubular article being cut to obtain a flat, single-layer insert}
- 2030/388 . . . . . {the tubular article being flattened to obtain a two-layer insert}
- 30/40 . . . . . Chemical pretreatment of textile inserts before building the tyre
- 30/42 . . . . . Endless textile bands without bead-rings
- 2030/421 . . . . . {General aspects of the joining methods and devices for creating the bands (joining of preformed parts in general [B29C 65/00](#))}
- 2030/422 . . . . . {Butt joining (single butt to butt joints in general [B29C 66/1142](#))}
- 2030/423 . . . . . {Joining by overlapping (single lap to lap joints in general [B29C 66/1122](#); single bevel to bevel joints in general [B29C 66/1162](#))}
- 2030/424 . . . . . {the joining devices being angularly adjustable (joining devices characterized by the movement of the joining tools [B29C 66/83](#))}
- 2030/425 . . . . . {the joining devices being laterally adjustable (joining devices characterized by the movement of the joining tools [B29C 66/83](#))}
- 2030/426 . . . . . {the joining devices being longitudinally adjustable (joining devices characterized by the movement of the joining tools [B29C 66/83](#))}
- 2030/427 . . . . . {Positioning the bands at the joining areas (positioning the parts to be joined in general [B29C 65/7802](#))}
- 2030/428 . . . . . {Positioning the bands at the overlapping joining areas (positioning the parts to be joined by setting the overlap in general [B29C 65/7835](#))}
- 30/44 . . . . . Stretching or treating the layers before application on the drum (during application [B29D 30/30](#))
- 2030/4406 . . . . . {Adjusting the positions of the layers}
- 2030/4412 . . . . . {angularly}
- 2030/4418 . . . . . {laterally, e.g. sideways}
- 2030/4425 . . . . . {longitudinally}
- 2030/4431 . . . . . {by using gas flows, e.g. air jets blowing onto or underneath or sideways the layers}
- 2030/4437 . . . . . {Adjusting the dimensions of the layers}

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- 2030/4443 . . . . . {Increasing the length of the layers, e.g. by stretching}
- 2030/445 . . . . . {Shortening the layers, e.g. by acting on the lateral edges or on the thickness or by cutting}
- 2030/4456 . . . . . {by using speed differences, e.g. between conveyors or between conveyor and drum}
- 2030/4462 . . . . . {by using grasping means}
- 2030/4468 . . . . . {Holding the layers}
- 2030/4475 . . . . . {by electrostatically charging the layers}
- 2030/4481 . . . . . {by using magnetic forces, e.g. magnets}
- 2030/4487 . . . . . {by using mechanical means, e.g. grippers or pressing bars}
- 2030/4493 . . . . . {by using suction means, e.g. vacuum}
- 30/46 . . . . . Cutting textile inserts to required shape
- 2030/463 . . . . . {Holding the textile inserts during cutting; means therefor}
- 2030/466 . . . . . {Cutting the textile inserts between cords}
- 30/48 . . . . . Bead-rings or bead-cores (from wire [B21F 37/00](#)); Treatment thereof prior to building the tyre
- 2030/481 . . . . . {Fillers or apexes}
- 2030/482 . . . . . {Applying fillers or apexes to bead cores}
- 2030/483 . . . . . {Treating the bead cores to increase rubber adhesion}
- 2030/485 . . . . . {the bead cores being made using a band containing a plurality of wires embedded in rubber}
- 2030/486 . . . . . {Additional components for the tyre bead areas, e.g. cushioning elements, chafers, flippers}
- 2030/487 . . . . . {Forming devices for manufacturing the beads}
- 2030/488 . . . . . {Clamping the wires on the forming devices}
- 30/50 . . . . . Covering, e.g. by winding, the separate bead-rings or bead-cores with textile material, e.g. with flipper strips (folding textile layers around bead-rings or bead-cores [B29D 30/18](#), [B29D 30/32](#); jointly covering bead-rings or bead cores [B29D 30/34](#))
- 30/52 . . . . . Unvulcanised treads, e.g. on used tyres; Retreading (apparatus for forming {treads by extrusion [B29C 47/00](#); apparatus for} vulcanising treads [B29C 35/02](#); apparatus characterised by the means for holding wheels or parts thereof [B60B 30/00](#))
- 2030/523 . . . . . {Ring-shaped treads}
- 2030/526 . . . . . {the tread comprising means for discharging the electrostatic charge, e.g. conductive elements or portions having conductivity higher than the tread rubber}
- 30/54 . . . . . Retreading
- 2030/541 . . . . . {Abrading the tyre, e.g. buffing, to remove tread and/or sidewalls rubber, to prepare it for retreading}
- 30/542 . . . . . {using envelopes or membranes provided with sealings for curing}
- 2030/543 . . . . . {Spreading the envelopes or membranes for inserting the tyre therein}
- 2030/544 . . . . . {Applying an intermediate adhesive layer, e.g. cement or cushioning element between carcass and tread}
- 2030/545 . . . . . {Using chambers to apply heat and pressure, e.g. autoclaves for curing the retreaded tyres}
- 2030/546 . . . . . {Measuring, detecting, monitoring, inspecting, controlling}
- 2030/547 . . . . . {Retreading solid tyres}
- 2030/548 . . . . . {Removing the worn out tread from the carcass, e.g. by pulling a continuous wire embedded between tread and carcass}
- 2030/549 . . . . . {Means for holding the tyre on a support}
- 30/56 . . . . . Retreading with prevulcanised tread {[B29D 30/542](#) takes precedence}
- 30/58 . . . . . Applying bands of rubber treads, i.e. applying camel backs
- 2030/582 . . . . . {Venting air inclusions, e.g. air trapped between tread and carcass}
- 2030/585 . . . . . {Radially expanding annular treads to fit it over carcasses}
- 2030/587 . . . . . {Using isostatic pressure, e.g. bags or bladders, to press tread and carcass against each other}
- 30/60 . . . . . by winding narrow strips
- 30/62 . . . . . by extrusion or injection of the tread on carcass
- 30/64 . . . . . Tyre spreaders
- 30/66 . . . . . Moulding treads on to tyre casings, e.g. non-skid treads with spikes
- 2030/662 . . . . . {Treads with antiskid properties, i.e. with spikes}
- 2030/665 . . . . . {Treads containing inserts other than spikes, e.g. fibers or hard granules, providing antiskid properties}
- 2030/667 . . . . . {Treads with antiskid properties, e.g. having special patterns or special rubber compositions}
- 30/68 . . . . . Cutting profiles into the treads of tyres
- 2030/685 . . . . . {before tread vulcanization}
- 30/70 . . . . . Annular breakers
- 2030/705 . . . . . {the breakers being obtained by cutting a continuous reinforced strip into predefined lengths and placing the cut strips side by side on a suitable support, e.g. a toroidal core or a carcass}
- 30/72 . . . . . Side-walls
- 2030/722 . . . . . {Reinforcing the sidewalls, e.g. by using filaments, fibers or additional reinforcing layers}
- 2030/724 . . . . . {Stiffening the sidewalls, e.g. by using additional inserts, e.g. made of rubber, plastics or other materials}
- 2030/726 . . . . . {Decorating or marking the sidewalls before tyre vulcanization (protecting, decorating, marking tyre sidewalls [B60C 13/00](#))}
- 2030/728 . . . . . {Decorating or marking the sidewalls after tyre vulcanization (protecting, decorating, marking tyre sidewalls [B60C 13/00](#))}
- 33/00** **Producing bushes for bearings**
- 35/00** **Producing footwear**
- NOTES**
1. Classification is made in this group if the moulding technique is of interest.
  2. The assembling of individual parts by mechanical joining is classified in subclass [A43D](#), e.g. by gluing shoe parts [A43D 25/00](#)
- 35/0009 . . . . . {by injection moulding; Apparatus therefor}



- 35/0018 . . {Moulds}
- 35/0027 . . . {Last constructions; Mountings therefor}
- 35/0036 . . . {with displaceable sole plates}
- 35/0045 . . . {Sealing means for the mould cavity}
- 35/0054 . {by compression moulding, vulcanising or the like; Apparatus therefor}
- 35/0063 . . {Moulds}
- 35/0072 . . . {Last constructions; Mountings therefor}
- 35/0081 . . . {with displaceable sole plates}
- 35/009 . . . {Sealing means for the mould cavity}
- 35/02 . made in one piece using a moulding technique, e.g. by injection moulding or casting
- 35/04 . . having multilayered parts
- 35/06 . having soles or heels formed and joined on to preformed uppers using a moulding technique, e.g. by injection moulding, pressing and vulcanising
- 35/061 . . {by injection moulding}
- 35/062 . . . {using means to bond the moulding material to the preformed uppers}
- 35/064 . . . {using particular materials for the preformed uppers}
- 35/065 . . {by compression moulding, vulcanising or the like}
- 35/067 . . . {using means to bond the moulding material to the preformed uppers}
- 35/068 . . . {using particular materials for the preformed uppers}
- 35/08 . . having multilayered parts
- 35/081 . . . {by injection moulding}
- 35/082 . . . . {injecting first the outer sole part}
- 35/084 . . . . {using exchangeable mould elements}
- 35/085 . . . {by compression moulding, vulcanising or the like}
- 35/087 . . . . {forming first the outer sole part}
- 35/088 . . . . {using exchangeable mould elements}
- 35/10 . having preformed soles or heels joined on to preformed uppers using a moulding technique, e.g. by feeding or injecting plastics material between the parts to be joined
- 35/12 . Producing parts thereof, e.g. soles, heels, uppers, by a moulding technique
- 35/122 . . {Soles}
- 35/124 . . {Heels}
- 35/126 . . {Uppers}
- 35/128 . . {Moulds or apparatus therefor}
- 35/14 . . Multilayered parts
- 35/142 . . . {Soles}
- 35/144 . . . {Heels}
- 35/146 . . . {Uppers}
- 35/148 . . . {Moulds or apparatus therefor}
- 99/00 Subject matter not provided for in other groups of this subclass {(not used, see subgroups)}**
- 99/0003 . {Producing profiled members, e.g. beams}
- 99/0007 . . {having a variable cross-section}
- 99/001 . {Producing wall or panel-like structures, e.g. for hulls, fuselages, or buildings (articles with hollow walls [B29D 24/00](#))}
- 99/0014 . . {provided with ridges or ribs, e.g. joined ribs}
- 99/0017 . . . {with filled hollow ridges}
- 99/0021 . . {provided with plain or filled structures, e.g. cores, placed between two or more plates or sheets, e.g. in a matrix}
- 99/0025 . {Producing blades or the like, e.g. blades for turbines, propellers, or wings}
- 99/0028 . . {hollow blades}
- 99/0032 . {Producing rolling bodies, e.g. rollers, wheels, pulleys or pinions (bushes for bearings [B29D 33/00](#); gear wheels [B29D 15/00](#))}
- 99/0035 . . {rollers or cylinders having an axial length of several times the diameter, e.g. for embossing, pressing, or printing}
- 99/0039 . {Producing countertops}
- 99/0042 . {Producing plain balls (hollow balls [B29D 22/04](#))}
- 99/0046 . {Producing rods (connecting-rods formed from fiber-reinforced resins [F16C 7/026](#))}
- 99/005 . {Producing membranes}
- 99/0053 . {Producing sealings ([B29D 99/0085](#) takes precedence)}
- 99/0057 . {Producing floor coverings}
- 99/006 . {Producing casings, e.g. accumulator cases}
- 99/0064 . {Producing wearing apparel}
- 99/0067 . . {Gloves}
- 99/0071 . . {Masks, e.g. gas masks}
- 99/0075 . . {Bathing caps}
- 99/0078 . {Producing filamentary materials}
- 99/0082 . {Producing articles in the form of closed loops, e.g. rings ([B29D 29/00](#) takes precedence)}
- 99/0085 . . {for sealing purposes}
- 99/0089 . {Producing honeycomb structures (consisting of porous ceramic ware [C04B 38/0006](#))}
- 99/0092 . {Producing upholstery articles, e.g. cushions, seats ([B29C 63/025](#) takes precedence)}
- 99/0096 . {Producing closure members for containers, e.g. closure caps or stoppers}