

E04C

STRUCTURAL ELEMENTS; BUILDING MATERIALS (for bridges E01D; specially designed for insulation or other protection E04B; elements used as building aids E04G; for mining E21; for tunnels E21D; structural elements with broader range of application than for building engineering F16, particularly F16S)

Definition statement

This subclass/group covers:

Structural elongated elements for buildings, prefabricated or not, as individual structural elements per se, e.g. pillars, columns, beams, girders, trusses;

Two-dimensional prefabricated building elements for the construction of parts of buildings, like sheets, slabs or panels, mainly for walls or partitions;

Bricks or block shaped elements, but only if having special adaptations, like e.g. serving for locating conduits, or being transparent, or being built-up from parts of different materials;

Concrete reinforcements, of metal or other materials, e.g. rebars, stirrups, reinforcing grids or cages, reinforcing fibres, connectors and spacers for reinforcements

References relevant to classification in this group

This subclass/group does not cover:

Compositions of concrete, mortars or like building materials	C04B
Structural elements for bridges	E01D
Building foundations	E02D
Structural elements specially designed for insulation or other protection	E04B
Building construction in general	E04B 1/00
Load-bearing walls made from panels	E04B 1/02 to E04B 1/14
Load- and non-load-bearing walls made up of layers of building elements, e.g. brick walls; bricks or block shaped building elements for	E04B 2/02 to E04B 2/54

walls	
Other load-bearing walls	E04B 2/56 to E04B 2/709 and E04B 2/84 to E04B 2/8664
Other non-load-bearing walls; Curtain walls	E04B 2/72 to E04B 2/8664 ; E04B 2/88 to E04B 2/967
Floor structures	E04B 5/00
Roof structures	E04B 7/00
Suspended or false ceilings	E04B 9/00
Roof coverings	E04D
Finishing work on building, e.g. lining, covering, flooring	E04F
Elements used as building aids, e.g. scaffolding, forms	E04G
Buildings or like structures for particular purposes, e.g. small temporary buildings, waiting shelters, telephone cabinets	E04H
Structural elements for mining	E21
Structural elements for tunnels	E21D
Structural elements with broader range of application than for building engineering	F16
Panels for lining or finishing	E04F 13/00

E04C 1/00

Building elements of block or other shape for the construction of parts of buildings (of relatively thin form E04C2/00; structural elongated elements designed for load-supporting E04C3/00, e.g. columns or pillars E04C3/30; manufacture or material of building bricks, stones, or the like B28, C03, C04;

paving elements E01C; general building constructions E04B, e.g. walls E04B2/00, floors E04B5/00, roofs E04B7/00, ceilings E04B9/00; [N: roof coverings E04D; coverings for walls or ceilings E04F13/00; floorings E04F15/00] structural elements specially designed for built-in conduit shafts E04F17/00; [N: elements for buildings for particular purposes E04H7/00]; special elements for building ovens or furnaces F24B, F27D)

Definition Statement

This subclass/group covers:

Bricks or block shaped elements for the construction of parts of buildings, but only if having special adaptations, like e.g. serving for locating conduits, or being made-up of different materials, e.g. stones with insulating inserts, or being made-up of transparent materials, e.g. glass bricks

References relevant to classification in this group

This subclass/group does not cover:

Building elements of relatively thin form, e.g. panels	E04C 2/00 - E04C 2/546
Structural elongated elements designed for load-supporting, e.g. beams, column or pillars	E04C 3/00 - E04C 3/46

Informative references

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

Manufacture or material of building bricks, stones, or the like	B28, C03, C04
Shaping clay or other ceramic composition, producing shaped articles of clay composition	B28B
Paving elements	E01C
General building constructions	E04B
Walls	E04B 2/00
Floor structures	E04B 5/00

Roof structures	E04B 7/00
Suspended ceilings	E04B 9/00
Roof coverings	E04D
Coverings for walls or ceilings	E04F 13/00
Floorings	E04F 15/00
Structural elements specially designed for built-in conduit shafts	E04F 17/00
Elements for buildings for particular purposes	E04H 7/00
Special elements for building ovens or furnaces	F24B , F27D

Special rules of classification within this group

Building elements of block or other shape are classified in [E04C 1/00](#) to [E04C 1/42](#) only if they are characterised by special adaptations, if they are build-up from parts of different materials or if they are made of glass or other translucent material; general building elements of block or brick shape for walls are classified in [E04B 2/00](#); general building elements of block or other shape for floors, e.g. filling elements, are classified in [E04B 5/00](#).

Building elements of block or other shape characterised by particular materials, like wood, fibres or plastics are classified in [P04C 1/00A](#).

Building elements of block or other shape comprising light conducting fibres are classified in [P04C 1/42A](#).

E04C 1/39

characterised by special adaptations, e.g. serving for locating conduits, for forming soffits, cornices, or shelves, for fixing wall-plates or door-frames, for claustra

Informative references

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

Walls having cavities in the building elements	E04B 2/14 , E04B 2/42
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Special adaptation of floors for incorporating ducts	E04B 5/48
Soffits coverings for roof cornices	E04D 13/158
Wall copings	E04D 3/405

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Claustra	Open-work wall
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E04C 1/392

[N: for ventilating, heating or cooling]

Definition statement

This subclass/group covers:

Building elements of block or other shape having openings or adaptations of relatively large section for ventilating, heating or cooling.

Informative references

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

Building elements of block or other shape having openings or adaptations of relatively small section for locating conduits	E04C 1/397
Domestic or space heating systems	F24D
Air conditioning	F24F
Ventilation in general	F24F 7/00

E04C 1/395

[N: for claustra, fences, planting walls, e.g. sound-absorbing (pots for vertical horticulture A01G9/022)]

References relevant to classification in this group

This subclass/group does not cover:

Pots for vertical horticulture	A01G 9/022
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Informative references

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

Retaining or protecting walls, made up of similar modular elements stacked without mortar	E02D 29/02 , E02D 29/025
Fences	E04H 17/00
Sound barriers	E01F 8/00

E04C 1/397

[N: serving for locating conduits (E04C1/392 takes precedence)]

Definition statement

This subclass/group covers:

Building elements of block or other shape having openings or adaptations of relatively small section for locating conduits

Informative references

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

Building elements of block or other shape having openings or adaptations of relatively large section for ventilating, heating or cooling.	E04C 1/392
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E04C 1/42

of glass or other transparent material [N: (panels made of glass bricks E04C2/546)]

References relevant to classification in this group

This subclass/group does not cover:

Slab-like translucent elements made of glass bricks	E04C 2/546
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E04C 2/00

Building elements of relatively thin form for the construction of parts of buildings, e.g. sheet materials, slabs, or panels (materials or manufacture, see the relevant subclasses, e.g. B27N, D21J; made in situ E04B; specially designed for insulation or other protection E04B1/62; load-carrying floor structures E04B5/02, E04B5/16; roofs consisting of self-supporting slabs E04B7/20; roof or like covering elements E04D3/00; for lining or finishing E04F13/00)

Definition Statement

This subclass/group covers:

Two-dimensional prefabricated building elements for the construction of parts of buildings, i.e. building elements in which one dimension is small in comparison to the other two, like e.g. sheets, slabs or panels, mainly used for walls or partitions

References relevant to classification in this group

This subclass/group does not cover:

Building elements of relatively thin form made in situ	E04B
Load-carrying floor structures, e.g. load-carrying prefabricated floor slabs	E04B 5/02 , E04B 5/16
Roof or like slab shaped covering elements	E04D 3/00

Informative references

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

Manufacture by dry processes of articles, made from particles or fibres of wood	B27N
Shaping clay or other ceramic composition, producing shaped articles of clay composition	B28B
Manufacture of articles from cellulosic fibrous suspension	D21J
Building elements of relatively thin form specially designed for insulation or other protection	E04B 1/62
Roof consisting of self-supporting slabs	E04B 7/20
Slabs or panels for suspended ceilings	E04B 9/04
Building elements for lining or finishing	E04F 13/00

Special rules of classification within this group

For the materials or the manufacture, see the relevant subclasses.

Classify in [E04C 2/00](#) to [E04C 2002/3494](#) all additional information

E04C 2/02

characterised by specified materials (translucent E04C2/54)

References relevant to classification in this group

This subclass/group does not cover:

Slab-like translucent elements	E04C 2/54
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E04C 2/04

of concrete or other stone-like material; of asbestos cement; of cement and other mineral fibres [N: of cement and other

mineral fibres] (E04C2/26 takes precedence; material or manufacture B28, C04)

References relevant to classification in this group

This subclass/group does not cover:

Building sheets, slabs or panels composed of materials covered by two or more of groups E04C 2/04 , E04C 2/08 , E04C 2/10 , or of materials covered by one of these groups with a material not specified in one of these groups	E04C 2/26
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Special rules of classification within this group

For the material or the manufacture, see B28, C04.

E04C 2/042

[N: Apparatus for handling the smaller elements or the hardenable material; bricklaying machines for prefabricated panels (bricklaying machines in general E04G21/22)]

Informative references

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

Bricklaying machines in general	E04G 21/22
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E04C 2/043

[N: of plaster (E04C2/049 takes precedence)]

Informative references

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

Furniture panels with a continuous layer allowing folding	A47B 96/202
Folding plates or sheets by forming folding lines and folding	B29C 53/063
Panels for suspended ceilings	E04B 9/04

Building sheets, slabs or panels made of an insulating material on plaster basis, like foamed plaster	E04C 2/049
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E04C 2/044

[N: of concrete (E04C2/049 takes precedence)]

Informative references

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

Walls made by projecting concrete to the exterior of an insulating foam panel	E04B 2/847
Building sheets, slabs or panels made of an insulating material on concrete basis, like cellular concrete	E04C 2/049

E04C 2/06

reinforced

Informative references

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

Reinforcing elements, e.g. for concrete	E04C 5/00
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E04C 2/08

of metal, e.g. sheet metal (E04C2/26 takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Building sheets, slabs or panels composed of materials covered by two or more of groups E04C 2/04 , E04C 2/08 , E04C 2/10 , or of materials covered by one of these	E04C 2/26
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groups with a material not specified in one of these groups	
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E04C 2/10

of wood, fibres, chips, vegetable stems, or the like; of plastics; of foamed products ([N: E04C2/049], E04C2/26 take precedence; [N: hydraulic cement and mineral fibres E04C2/04])

References relevant to classification in this group

This subclass/group does not cover:

Building sheets, slabs or panels made of hydraulic cement and mineral fibres	E04C 2/04
Building sheets, slabs or panels made of foamed concrete or other stone-like products	E04C 2/049
Building sheets, slabs or panels composed of materials covered by two or more of groups E04C 2/04 , E04C 2/08 , E04C 2/10 , or of materials covered by one of these groups with a material not specified in one of these groups	E04C 2/26

E04C 2/12

of solid wood

Informative references

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

Wood working	B27
Building sheets, slabs or panels laminated and composed of materials covered by two or more of groups E04C 2/12 , E04C 2/16 , E04C 2/20	E04C 2/24

E04C 2/14

reinforced

Informative references

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

Reinforced wooden beams	E04C 3/18
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E04C 2/16

of fibres, chips, vegetable stems, or the like

Definition statement

This subclass/group covers:

Building sheets, slabs or panels composed of organic or inorganic fibres, organic or inorganic chips, vegetable stems, or the like, with or without additional glue or adhesive

References relevant to classification in this group

This subclass/group does not cover:

Building sheets, slabs or panels made of hydraulic cement and mineral fibres	E04C 2/04
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Informative references

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

Building sheets, slabs or panels laminated and composed of materials covered by two or more of groups E04C 2/12 , E04C 2/16 , E04C 2/20	E04C 2/24
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E04C 2/18

with binding wires, reinforcing bars, or the like

Informative references

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

Reinforcing elements, e.g. for concrete	E04C 5/00
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E04C 2/20

of plastics

Informative references

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

Shaping of plastics	B29C
Building sheets, slabs or panels laminated and composed of materials covered by two or more of groups E04C 2/12 , E04C 2/16 , E04C 2/20	E04C 2/24

E04C 2/22

reinforced [N: E04C2/205 takes precedence]

Informative references

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

Building sheets, slabs or panels made of foamed plastics	E04C 2/205
Reinforcing elements, e.g. for concrete	E04C 5/00

E04C 2/24

laminated and composed of materials covered by two or more of groups E04C2/12, E04C2/16, E04C2/20

Informative references

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

Layered products	B32B
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E04C 2/26

composed of materials covered by two or more of groups E04C2/04, E04C2/08, E04C2/10 or of materials covered by one of these groups with a material not specified in one of the groups [N: (of cement and mineral fibres E04C2/04)]

Definition statement

This subclass/group covers:

Building sheets, slabs or panels, laminated or not, and composed of materials covered by two or more of groups [E04C 2/04](#), [E04C 2/08](#), [E04C 2/10](#) or of materials covered by one of these groups with a material not specified in one of the groups.

References relevant to classification in this group

This subclass/group does not cover:

Building sheets, slabs or panels made of hydraulic cement and mineral fibres	E04C 2/04
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Informative references

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

Layered products	B32B
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E04C 2/288

composed of insulating material and concrete, stone or stone-like material

Special rules of classification within this group

Sandwich panels composed of layers of insulating material alternated with layers of concrete are classified in [E04C 2/288](#).

E04C 2/296

composed of insulating material and non-metallic or

unspecified sheet-material (E04C2/288 takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Building sheets, slabs or panels composed of insulating material and concrete, stone or stone-like material	E04C 2/288
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Informative references

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

Fibrous panels characterised by the orientation of the fibres	E04B 2001/7683
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E04C 2/30

characterised by the shape or structure (translucent E04C2/54)

References relevant to classification in this group

This subclass/group does not cover:

Slab-like translucent elements	E04C 2/54
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E04C 2/32

formed of corrugated or otherwise indented sheet-like material; composed of such layers with or without layers of flat sheet-like material

Informative references

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

Corrugated metal floor slabs for floors	E04B 5/40
Roofing slabs having special cross-sections	E04D 3/24 - E04D 3/34
Roofing slabs comprising two or more layers, with or without corrugations	E04D 3/35

Special rules of classification within this group

Corrugated sheet-like material having one as well as a plurality of layers is classified in [E04C 2/32](#)

E04C 2/322

[N: with parallel corrugations]

Definition statement

This subclass/group covers:

Sheet-like material with parallel corrugations, e.g. with parallel undulated corrugations

E04C 2/324

[N: with incisions or reliefs in the surface (E04C2/326 takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Building elements of relatively thin form with corrugations, incisions or reliefs in more than one direction of the element	E04C 2/326
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E04C 2/326

[N: with corrugations, incisions or reliefs in more than one direction of the element]

Definition statement

This subclass/group covers:

Sheet-like material with corrugations, incisions or reliefs in more than one direction of the element, e.g. egg-crate reliefs

E04C 2/34

composed of two or more spaced sheet-like parts (E04C2/32

takes precedence; spacers for cavity walls E04B2/44)

Definition statement

This subclass/group covers:

Sheet-like elements composed of two or more spaced sheet-like parts, e.g. sandwich panels

Informative references

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

Spacers for cavity walls	E04B 2/44
Panels composed of insulating material and concrete	E04C 2/288
Building elements of relatively thin form formed of corrugated or otherwise indented sheet-material	E04C 2/32
Roofing slabs comprising two or more layers	E04D 3/35

E04C 2/3405

[N: spaced apart by profiled spacer sheets]

Definition statement

This subclass/group covers:

Sheet-like elements composed of two or more spaced sheet-like parts, spaced apart by profiled spacer sheets, like e.g. corrugated cardboard

E04C 2/36

spaced apart by transversely-placed strip material, e.g. honeycomb panels (honeycomb or other core members for layered products B32B)

Informative references

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

Honeycomb or other core members for layered products	B32B
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E04C 2/38

with attached ribs, flanges, or the like, e.g. framed panels (concerned with attaching to other panels or elements to form a structure, see the places for the relevant structure, e.g. E04B2/00)

Definition statement

This subclass/group covers:

Building sheets, slabs or panels having attached ribs, flanges, or the like, e.g. framed panels and panels with upstanding edges around their borders

Special rules of classification within this group

Details of connection to other panels or elements to form a structure are classified in the groups of the relevant structure, e.g. [E04B 2/00](#) for wall structures

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Framed panel	Panel having a frame around its borders
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E04C 2/40

composed of a number of smaller components rigidly or movably connected together, e.g. interlocking, hingedly connected [N: of particular shape, e.g. not rectangular of variable shape or size, e.g. flexible or telescopic panels (E04C2/041 takes precedence)]

Definition statement

This subclass/group covers:

Building sheets, slabs or panels, composed of a number of smaller components rigidly or movably connected together, e.g. foldable garage doors

References relevant to classification in this group

This subclass/group does not cover:

Building sheets, slabs or panels, composed of a number of smaller components rigidly connected together, of concrete or other stone-like material, of asbestos cement, of cement and other mineral fibres	E04C 2/041
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E04C 2/42

Gratings; Grid-like panels (reinforcing elements E04C5/00; built-in gratings E04F19/10; gratings in general F16S3/00)

References relevant to classification in this group

This subclass/group does not cover:

Reinforcing grids or mats of metal	E04C 5/04
Grids for ceilings	E04B 9/345
Reinforcing grids or mats of metal	E04C 5/04
Non-metallic reinforcing mats	E04C 5/07
Built-in gratings	E04F 19/10
Gratings or grilles made from a sheet	F16S 1/00
Gratings in general	F16S 3/00

Informative references

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

Grids, gratings for stable floors	A01K 1/0151
Making metal grids	B21D 47/005
Circumferential gutters for swimming-pools	E04H 4/1227

E04C 2/52

with special adaptations for auxiliary purposes, e.g. serving for locating conduits (E04C2/54 takes precedence; block-shaped elements therefor E04C1/39; floor structures incorporating ducts E04B5/48)

References relevant to classification in this group

This subclass/group does not cover:

Slab-like translucent elements	E04C 2/54
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Informative references

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

Floor structures incorporating ducts	E04B 5/48
Building elements of block shape having adaptations serving for locating conduits	E04C 1/39

E04C 2/523

[N: for ventilating]

Informative references

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

Ventilation in general	F24F 7/00
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E04C 2/525

[N: for heating or cooling (solar heat collectors F24J2/04; heat storage F28D20/00)]

Informative references

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

Solar heat collectors	F24J 2/042
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Heat storage	E28D 20/00
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E04C 2/54

Slab-like translucent elements (floors for transmitting light E04B5/46; translucent or open-work ceilings E04B9/32, E04B9/34; translucent roof coverings E04D3/06, E04D3/28)

Informative references

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

Floors for transmitting light	E04B 5/46
Translucent ceilings, open work ceilings	E04B 9/32 , E04B 9/34
Translucent roof coverings	E04D 3/06 , E04D 3/28

E04C 2/543

[N: Hollow multi-walled panels with integrated webs

Definition statement

This subclass/group covers:

Translucent hollow slab-like elements having a cross-section which is internally subdivided by walls, e.g. a translucent polyurethane roofing slab which cross section is internally subdivided by, in use, horizontal and vertical walls

Informative references

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

Translucent roof covering made with elements having special cross-sections	E04D 3/28
Extrusion dies for extruding multi-channel profiles	B29C 47/20E
Greenhouse of flexible material with double or multiple walls	A01G 9/1469

E04C 3/00

Structural elongated elements designed for load-supporting (as building aids E04G)

Definition statement

This subclass/group covers:

Structural elongated elements designed for permanent load-supporting in buildings, e.g. building beams and columns

References relevant to classification in this group

This subclass/group does not cover:

Structural elongated elements for bridges	E01D
Piles for foundations	E02D 5/00
Non-load supporting elongated members for partition walls	E04B 2/74
Non-load supporting elongated elements for suspended ceilings	E04B 9/06
Structural elongated elements designed as building aids	E04G
Structural elongated elements for masts, towers, poles	E04H 12/00
Structural elongated elements for tents	E04H 15/00
Structural elongated elements for mining, tunnels	E21C , E21D

Informative references

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

Structural elongated elements for railways or railway vehicles, for land	B61, B62, B63, B64
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vehicles, for ships, for aircrafts	
Structural elongated elements for hoisting devices, e.g. cranes	B66
Structures comprising elongated load-supporting parts; three-dimensional framework structures	E04B 1/18 ; E04B 1/19
Connections of bar shaped building elements; for metal bars; for wooden bars	E04B 1/58 ; E04B 1/2403 ; E04B 1/2604

Special rules of classification within this group

Classify in [E04C 3/00](#) to [E04C 2003/0495](#) all additional information

E04C 3/005

[N: Girders or columns that are rollable, collapsible or otherwise adjustable in length or height (girders as supporting members for forms E04G11/54)]

Informative references

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

Structures characterised by movable, separable, or collapsible parts	E04B 1/343
Extensible girders as supporting members for forms; telescopic	E04G 11/54 ; E04G 11/56
Telescopic shores or struts	E04G 25/04
Telescopic poles	E04H 12/182
Collapsible frames for tents; telescopic	E04H 15/44 ; E04H 15/46
Telescopic grandstands; foldable, retractable tribunes	E04H 3/123 ; E04H 3/126
Inflatable tubular frameworks for tents	E04H 2015/201

Locating rails for walls, with adjustable curvature	E04B 2002/7481
Extensible carriers for electric cables	H02G 11/006

Special rules of classification within this group

E04C 3/02

Joists; Girders, trusses, or trusslike structures, e.g. prefabricated; Lintels; Transoms; [N: Braces] (E04C3/38 takes precedence; for structures characterised by movable, separable, or collapsible parts E04B1/343; [N: braced purlins E04B7/024])

References relevant to classification in this group

This subclass/group does not cover:

Arched girders or portal frames	E04C 3/38
Roof structures having braced purlins	E04B 7/024

Informative references

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

Girders for cranes	B66C 6/00
Girders for bridges	E01D 9/00
Structures characterised by movable, separable, or collapsible parts	E04B 1/343
Connections of bar shaped building elements	E04B 1/58
Constructional features of the supporting construction of suspended-ceilings, e.g. inverted T-bars	E04B 9/06
Reinforcing elements consisting of	E04C 5/065

light-weight girders as reinforcing elements, e.g. light-weight girders for floors construction	
Girders for shutterings	E04G 11/50
Cross-sectional aspects of beams, girders and joists made of metal	E04C 2003/0404 , E04C 2003/0486

Special rules of classification within this group

Structures characterised by movable, separable, or collapsible parts should be classified in [E04B 1/343](#); when these structures have elongated structural elements presenting inventive aspects they can also be classified in [E04C 3/02](#) or its sub-groups.

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Joist	Horizontal supporting member that runs from wall to wall, wall to beam, or beam to beam to support a ceiling, a roof or a floor.
Girder	Support beam used in construction, e.g. an I-shaped girder, a box-shaped girder, a truss- or lattice-girder.
Truss	Elongated structure comprising one or more triangular units constructed with straight members whose ends are connected at joints referred as nodes.
Lintel	Load-bearing elongated element located in use over door or window openings.
Transom	A bar of wood or stone across the top of a door or window opening
Brace	A structural elongated element serving as connecting/reinforcing element between structural elements,

	e.g. braces between wooden joists in a floor structure
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E04C 3/04

of metal (E04C3/29 takes precedence; as reinforcing elements E04C5/06 ; manufacture B21)

References relevant to classification in this group

This subclass/group does not cover:

Joists, girders or trusses built-up from parts of different material	E04C 3/29
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Informative references

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

Manufacture of metallic elongated elements; Rolling of metal	B21B
Metallic girder or trusses used as reinforcing elements	E04C 5/06
Structures of metal for towers, masts or poles	E04H 12/08
Cross-sectional aspects of beams, girders and joists made of metal	E04C 2003/0404

Special rules of classification within this group

Metallic girders or trusses used as reinforcing elements should be classified in [E04C 3/04](#) and its sub-groups only if they have some inventive aspects and can be used as load-supporting elements per se.

E04C 3/06

with substantially solid, i.e. unapertured, web (E04C3/10, E04C3/11 take precedence) [N: honeycomb girders E04C3/083

]

References relevant to classification in this group

This subclass/group does not cover:

Metallic joists, girders and trusses with non-parallel upper and lower edges	E04C 3/11
Honeycomb metallic beams, i.e. castellated beams; metallic beams with apertured solid web	E04C 3/083

Informative references

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

Prestressed metallic joists, girders and trusses	E04C 3/10
Cross-sectional aspects of beams, girders and joists made of metal	E04C 2003/0404

Special rules of classification within this group

Metallic girders having a web constituted by a series of unapertured webs having a spacing between them, i.e. like a rake, are classified in [E04C 3/06](#) and in [E04C 3/083](#).

E04C 3/07

at least partly of bent or otherwise deformed strip- or sheet-like material

Informative references

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

Bending of sheet metal	B21D 5/00
Wall partitions with framework or posts of metal	E04B 2/76
Metallic girders or beams made of bent or otherwise deformed strip- or sheet-like material, and having an apertured web	E04C 3/09

Supporting beams for a suspended ceiling having a folded cross-section	E04B 9/065
Lintels	E04C 2003/023
Braces	E04C 2003/026
Cross-sectional aspects of beams, girders and joists made of metal	E04C 2003/0404

E04C 3/08

with apertured web, e.g. with a web consisting of bar-like components; ,Honeycomb girders (E04C3/10, E04C3/11 take precedence)

References relevant to classification in this group

This subclass/group does not cover:

Metallic joists, girders and trusses with non-parallel upper and lower edges	E04C 3/11
Metallic arched girders or trusses, portal frames	E04C 3/40

Informative references

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

Truss-type bridges	E01D 6/00
Three-dimensional frameworks	E04B 1/19
Connections specially adapted for structures comprising elongated supporting parts of metal	E04B 1/2403
Prestressed metallic joists, girders and trusses	E04C 3/10
Reinforcing elements consisting of metallic light-weight girders, e.g.	E04C 5/065

light-weight girders for floor construction	
Metallic truss-like structures for masts, towers, poles	E04H 12/10
Metallic truss-like structures composed of separate truss elements	E04C 2003/0486

E04C 3/083

[N: Honeycomb girders; Girders with apertured solid web]

Definition statement

This subclass/group covers:

Honeycomb metallic girders, i.e. castellated metallic girders; Metallic girders with apertured solid web, i.e. metallic girders in which apertures have been made in the solid web.

References relevant to classification in this group

This subclass/group does not cover:

Metallic girders or beams made of bent or otherwise deformed strip- or sheet-like material, and having an apertured web	E04C 3/09
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Informative references

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

Making rigid structural elements or units, e.g. honeycomb structures	B21D 47/00
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Special rules of classification within this group

Metallic girders having a web constituted by a series of unapertured webs having a spacing between them, i.e. like a rake, are classified in [E04C 3/06](#) and in [E04C 3/083](#).

Synonyms and Keywords

Honeycomb girder	Castellated girder
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E04C 3/09

at least partly of bent or otherwise deformed strip- or sheet-like material

Definition statement

This subclass/group covers:

Metallic girders or beams made of at least partially deformed strip- or sheet-like material, and having an apertured web, e.g. made by an expanded metal sheet or made by cutting holes in the solid web.

Informative references

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

Supporting beams for a suspended ceiling having a folded cross-section	E04B 9/065
Wall partitions with framework or posts of metal	E04B 2/76
Metallic girders or beams made of at least partially deformed strip- or sheet-like material, and having a substantially unapertured web	E04C 3/07
Bending of sheet metal	B21D 5/00

Special rules of classification within this group

Metallic trusses made of bar-like elements consisting of bent or deformed sheet material, the bar-like elements per se having an unapertured web, should be classified in [E04C 3/08](#) and in [E04C 3/07](#), not in [E04C 3/09](#).

E04C 3/10

prestressed

Informative references

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

Members specially adapted to be used in prestressed constructions	E04C 5/08
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E04C 3/11

with non-parallel upper and lower edges, e.g. roof trusses (arched girders, portal frames E04C3/38)

References relevant to classification in this group

This subclass/group does not cover:

Metallic arched girders, portal frames	E04C 3/40
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Informative references

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

Connections specially adapted for structures comprising elongated supporting parts of metal	E04B 1/2403
Roofs consisting of a plurality of parallel similar trusses	E04B 7/02

E04C 3/12

of wood, e.g. with reinforcements, with tensioning members (E04C3/292 takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Joists, girders or trusses made of wood and metal	E04C 3/292
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Informative references

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

Wall partitions with framework or posts of wood	E04B 2/80
Wood working	B27

E04C 3/14

with substantially solid, i.e. unapertured, web (E04C3/17, E04C3/18 take precedence)

References relevant to classification in this group

This subclass/group does not cover:

Joists, girders or trusses with non-parallel upper and lower edges, e.g. roof trusses	E04C 3/17
Joists, girders or trusses made of wood with metal or other reinforcements or tensioning members	E04C 3/18

Special rules of classification within this group

Wooden girders having a web constituted by a series of unapertured webs having a spacing between them, i.e. like a rake, are classified in [E04C 3/14](#) and in [E04C 3/16](#).

E04C 3/16

with apertured web, e.g. trusses (E04C3/17, E04C3/18 take precedence)

References relevant to classification in this group

This subclass/group does not cover:

Joists, girders, or trusses with non-parallel upper and lower edges, e.g. roof trusses	E04C 3/17
Wooden arched girders, portal frames	E04C 3/42

Informative references

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

Three-dimensional framework structures	E04B 1/19
Connections specially adapted for structures comprising elongated supporting parts of wood	E04B 1/2604
Joists, girders or trusses made of wood with metal or other reinforcements or tensioning members	E04C 3/18
Wooden truss-like structures for masts, towers and poles	E04H 12/06

Special rules of classification within this group

Wooden girders having a web constituted by a series of unapertured webs having a spacing between them, i.e. like a rake, are classified in [E04C 3/14](#) and in [E04C 3/16](#).

E04C 3/17

with non-parallel upper and lower edges, e.g. roof trusses

References relevant to classification in this group

This subclass/group does not cover:

Wooden arched girders, portal frames	E04C 3/42
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Informative references

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

Connections specially adapted for structures comprising elongated supporting parts of wood	E04B 1/2604
Roof consisting of a plurality of parallel similar trusses	E04B 7/022

Wood working	B27
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E04C 3/18

with metal [N: or other] reinforcements or tensioning members

Informative references

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

Reinforced panels of solid wood	E04C 2/14
Joists, girders or trusses made of wood and metal	E04C 3/292
Members specially adapted to be used in prestressed constructions	E04C 5/08

E04C 3/185

[N: Synthetic reinforcements]

Informative references

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

Reinforcing elements of material other than metal	E04C 5/07
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E04C 3/20

of concrete or other stone-like material, e.g. with reinforcements or tensioning members (reinforcing elements E04C5/00)

Informative references

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

Joists, girders or trusses built-up from parts of steel and parts of concrete	E04C 3/293
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Reinforcing elements	E04C 5/00
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E04C 3/205

[N: with apertured web, e.g. frameworks, trusses (E04C3/26 takes precedence)]

Informative references

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

Prestressed joints, girders or trusses made of concrete or other stone-like material	E04C 3/26
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E04C 3/22

built-up by elements jointed in line

Informative references

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

Prestressed joints, girders or trusses made of concrete or other stone-like material	E04C 3/26
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E04C 3/26

prestressed (E04C3/22, E04C3/29 take precedence; Prestressing members E04C5/08)

References relevant to classification in this group

This subclass/group does not cover:

Joists, girders or trusses made of concrete or other stone-like material, and built-up by elements jointed in line	E04C 3/22
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Informative references

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

Joists, girders or trusses built-up from parts of steel and parts of concrete	E04C 3/293
Members specially adapted to be used in prestressed constructions	E04C 5/08

E04C 3/28

of other materials

Definition statement

This subclass/group covers:

Joists, girders or trusses made of specified materials other than metal, wood, concrete or stone-like materials, e.g. joists made of glass or plastics

References relevant to classification in this group

This subclass/group does not cover:

Joists, girders or trusses built-up from parts of different materials, e.g. laminated from parts of different materials	E04C 3/29
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Informative references

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

Producing beams of plastics	B29D 99/0003
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E04C 3/29

built-up from parts of different material, i.e. composite structures

Definition statement

This subclass/group covers:

Joists, girders or trusses built-up from parts of specified different materials,

e.g. built-up from laminated parts of different materials, or from assembled parts of different materials

Informative references

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

Shaping composites	B29C 70/00
Producing beams of plastics	B29D 99/0003
Layered products	B32B
Superstructures of vehicles characterised by the materials	B62D 29/00

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Composite structure	Composite structure refers to the structure of the assembly of the different parts, not to the material
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E04C 3/292

the materials being wood and metal

References relevant to classification in this group

This subclass/group does not cover:

Wooden joists, girders or trusses with metal reinforcements or tensioning members	E04C 3/18
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E04C 3/293

the materials being steel and concrete (concrete with internal reinforcements or tensioning members E04C3/20)

References relevant to classification in this group

This subclass/group does not cover:

Metallic beams forming part of a floor structure	E04B 5/29
Joists, girders or trusses made of concrete with internal reinforcements or tensioning members	E04C 3/20

E04C 3/294

of concrete combined with a girder-like structure extending laterally outside the element (light weight girders used as reinforcement E04C5/065; as part of a floor structure E04B5/23)

References relevant to classification in this group

This subclass/group does not cover:

Metallic beams forming part of a floor structure, and extending below the floor	E04B 5/29
Light weight girders with concrete precast parts, used as reinforcement	E04C 5/065

E04C 3/30

Columns; Pillars; Struts (not designed for end loading E04C3/02; posts, masts, as independent structures E04H12/00)

References relevant to classification in this group

This subclass/group does not cover:

Elongated supporting members for partition walls	E04B 2/74
Structural elongated elements not designed for end loading	E04C 3/02 - E04C 3/294
Structural elongated elements designed as building aids	E04G

Posts, masts as independent structures	E04H 12/00
Structural elongated elements for tents	E04H 15/00
Poles for tents	E04H 15/60

Informative references

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

Coverings or linings for columns	E04F 13/00
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E04C 3/32

of metal (E04C3/36 takes precedence)

Informative references

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

Girders made of metal	E04C 3/04 - E04C 3/10
Cross-sectional aspects of beams, girders and joists made of metal	E04C 2003/0404

Special rules of classification within this group

Always classify in [E04C 3/32](#) columns or pillars in which at least a bearing part of the column or pillar is made of metal, with the exception of concrete rebars

E04C 3/34

of concrete other stone-like material, with or without permanent form elements, with or without internal or external reinforcement, e.g. metal coverings (E04C3/36 takes precedence)

Informative references

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

Closed reinforcement cages composed of one single bent reinforcement mat	E04C 5/0613
Closed reinforcement cages with spiral- or coil-shaped stirrup rod	E04C 5/0618

Special rules of classification within this group

Always classify in [E04C 3/34](#) columns or pillars in which at least a bearing part of the column or pillar is made of concrete or stone-like material

E04C 3/36

of other materials or combined with other materials [N: or combined with other materials]

Definition statement

This subclass/group covers:

Columns, pillars or struts made of specified materials other than metal or concrete or stone-like materials, e.g. wood, glass, plastics

Informative references

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

Joists, girders or trusses made of materials other than metal, wood. concrete or stone-like materials, e.g. joists made of glass or plastics	E04C 3/28
Joists, girders or trusses built-up from parts of different materials, e.g. laminated from parts of different materials	E04C 3/29

E04C 3/38

Arched girders or portal frames (straight girders able to be bent E04C3/02; inflatable E04H15/20)

References relevant to classification in this group

This subclass/group does not cover:

Straight girders able to be bent	E04C 3/02
Inflatable girders or portal frames	E04H 15/20

Informative references

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

Gantries or semi-gantries, a.k.a. road sign holders	E01F 9/0113
Arched structures	E04B 1/32
Vaulted roofs	E04B 7/08
Arched-type supports for tents	E04H 15/36

E04C 3/40

of metal (E04C3/46 takes precedence)

Informative references

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

Mechanical metal-working	B21
Metallic girders	E04C 3/04
Metallic trusses	E04C 3/08 ; E04C 3/11
Cross-sectional aspects of beams, girders and joists made of metal	E04C 2003/0404
Connections specially adapted for structures comprising elongated supporting parts of metal	E04B 1/2403

Special rules of classification within this group

Always classify in [E04C 3/40](#) if a bearing part of the arched girder or portal frame is made of metal

E04C 3/42

of wood, e.g. units for rafter roofs (E04C3/46 takes precedence)

Informative references

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

Working of wood	B27
Connections specially adapted for structures comprising elongated supporting parts of wood	E04B 1/2604
Wooden girders	E04C 3/12
Wooden trusses	E04C 3/16 ; E04C 3/17

Special rules of classification within this group

Always classify in [E04C 3/42](#) if a bearing part of the arched girder or portal frame is made of wood

E04C 3/44

of concrete or other stone-like material, e.g. with reinforcements or tensioning members

Informative references

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

Reinforcing elements	E04C 5/00
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Special rules of classification within this group

Always classify in [E04C 3/44](#) if a bearing part of the arched girder or portal frame is made of concrete or other stone-like material

E04C 3/46

of other materials

Definition statement

This subclass/group covers:

Arched girders or portal frames made of specified materials other than metal, wood, concrete or stone-like material, e.g. of glass, plastics

Informative references

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

Joists, girders or trusses made of materials other than metal, wood, concrete or stone-like materials, e.g. joists made of glass or plastics	E04C 3/28
Joists, girders or trusses built-up from parts of different materials, e.g. laminated from parts of different materials	E04C 3/29

E04C 5/00

Reinforcing elements, e.g. for concrete; Auxiliary elements therefor; ([N: methods or devices for making reinforcing materials B21D]; material composition [N: C04B], C21, C22; arrangements of reinforcing elements, see the relevant subclasses)

Definition statement

This subclass/group covers:

Reinforcing elements, metallic and non-metallic, in particular for concrete;

Auxiliary elements for reinforcements, e.g. connectors, spacers;

Arrangements of reinforcing elements, e.g. stirrup baskets

References relevant to classification in this group

This subclass/group does not cover:

Methods or devices for making metallic reinforcing materials	B21D
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Informative references

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

Material composition	C04B , C21, C22
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E04C 5/01

Reinforcing elements of metal, e.g. with non-structural coatings [N: (E04C5/08 takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Members specially adapted to be used in prestressed constructions	E04C 5/08
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Informative references

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

Mechanical metal-working	B21
Working or processing of metallic wire	B21F

E04C 5/012

[N: Discrete reinforcing elements, e.g. fibres]

Definition statement

This subclass/group covers:

Discrete reinforcing elements of metal, i.e. suitable to be mixed with the concrete before pouring, e.g. metal fibres

Informative references

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

Filler material of fibre shape for	C04B 20/0048
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concrete	
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Special rules of classification within this group

Discrete reinforcing elements of metal with a well-defined shape other than granular are classified in [E04C 1/00A](#); discrete elements of metal of granular shape or the shape of which is not defined are considered filler elements and are only classified in [C04B](#)

E04C 5/015

[N: Anti-corrosion coatings or treating compositions, e.g. containing waterglass or based on another metal (coating of discrete reinforcing elements C04B20/10)]

References relevant to classification in this group

This subclass/group does not cover:

Coating of discrete metallic reinforcing elements, e.g. coating of metallic fibres	C04B 20/10
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Informative references

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

Inhibiting corrosion of metallic material by applying inhibitors to the surface in danger	C23F 11/00
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E04C 5/017

[N: Anti-corrosion coatings or treating compositions containing cement]

Informative references

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

Mortars containing hydraulic cement	C04B 28/02
Coating compositions based on cement	C09D 1/06

E04C 5/02

of low bending resistance

References relevant to classification in this group

This subclass/group does not cover:

Anchoring devices specially adapted for balconies	E04B 1/0038
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Informative references

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

Masonry wall-ties, e.g. anchors	E04B 1/4178
Reinforcing elements for brick walls, inserted between brick layers	E04B 2/10 , E04B 2/20 , E04B 2/34 , E04B 2/48

E04C 5/03

with indentations, projections, ribs, or the like, for augmenting the adherence to the concrete

Informative references

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

Rolling or cold-forming of concrete metallic reinforcement bars	B21B 1/163
Bending of reinforcing metallic rods for concrete	B21D 11/15

E04C 5/04

Mats ([N: combined with reinforcing elements protruding out of the plane of the mat 5/06B; three-dimensional mats E04C5/0636]; bases for plaster E04F13/04)

Definition statement

This subclass/group covers:
Metallic reinforcing mats

References relevant to classification in this group

This subclass/group does not cover:

Metallic reinforcing mats combined with reinforcing elements protruding out of the plane of the mat	E04C 5/0627
Three-dimensional metallic reinforcing mats	E04C 5/0636
Bases for plaster	E04F 13/04

Informative references

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

Making metallic wire nets	B21F 27/00
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E04C 5/06

of high bending resistance, i.e. of essentially three-dimensional extent, e.g. lattice girders [N: (anchorage devices specially adapted for balconies E04B1/0038; supporting devices for connector reinforcing rods for concrete walls E04G21/125)]

References relevant to classification in this group

This subclass/group does not cover:

Anchorage devices specially adapted for balconies	E04B 1/0038
Supporting devices for connector reinforcing rods for concrete walls, e.g. reinforcement connection boxes	E04G 21/125

Special rules of classification within this group

Loose closed stirrups suitable to make prismatic or cylindrical reinforcement cages are classified in [E04C 5/0604](#).

Loose open stirrups suitable to make stirrup baskets are classified in [E04C 5/0622](#).

E04C 5/0604

[N: Prismatic or cylindrical reinforcement cages composed of longitudinal bars and open or closed stirrup rods (E04C5/0631 takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Reinforcing mats combined with separate prefabricated reinforcement cages or girders	E04C 5/0631
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Informative references

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

Making wire network of tubular form, e.g. as reinforcement for pipes or pillars	B21F 27/121
Making wire network of tubular form by attaching individual stirrups to longitudinal wires	B21F 27/125

Special rules of classification within this group

Loose closed stirrups suitable to make prismatic or cylindrical reinforcement cages are classified in [E04C 5/0604](#).

E04C 5/0609

[N: Closed cages composed of two or more coacting cage parts, e.g. transversally hinged or nested parts

Informative references

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

Making wire network of tubular form by bending preformed mesh	B21F 27/127
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E04C 5/0613

[N: Closed cages made of one single bent reinforcement mat]

Informative references

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

Making wire network of tubular form by bending preformed mesh	B21F 27/127
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E04C 5/0618

[N: Closed cages with spiral- or coil-shaped stirrup rod]

Informative references

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

Making wire network of tubular form by attaching continuous stirrup to longitudinal wires, by rotation	B21F 27/122 , B21F 27/124
Prefabricated foundation piles of reinforced concrete	E02D 5/30
Concrete foundation piles cast in situ	E02D 5/34
Columns or pillars made of concrete	E04C 3/34

E04C 5/0622

[N: Open cages, e.g. connecting stirrup baskets (E04C5/0609 takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Closed cages composed of two or more co-acting cage parts	E04C 5/0609
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Special rules of classification within this group

Loose stirrups suitable to make stirrup baskets are classified in [E04C 5/0622](#).

E04C 5/0627

[N: Three-dimensional reinforcements composed of a prefabricated reinforcing mat combined with reinforcing elements protruding out of the plane of the mat (E04C5/0645 takes precedence)]

Informative references

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

Shear reinforcements	E04C 5/0645
Making of plaster-carrying wire network	B21F 27/20

E04C 5/0631

[N: Reinforcing mats combined with separate prefabricated reinforcement cages or girders (E04C5/064 takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Three-dimensional reinforcing mats composed of two parallel mats connected by separate connecting parts	E04C 5/064
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Special rules of classification within this group

[E04C 5/064](#) takes precedence

E04C 5/0636

[N: Three-dimensional reinforcing mats composed of reinforcing elements laying in two or more parallel planes and connected by separate reinforcing parts (E04C5/0645 takes precedence)]

Informative references

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

Shear reinforcements	E04C 5/0645
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E04C 5/064

[N: the reinforcing elements in each plane being formed by, or forming a, mat of longitudinal and transverse bars]

Informative references

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

Making wire networks of three-dimensional form by connecting wire networks	B21F 27/121
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E04C 5/0645

[N: Shear reinforcements, e.g. shearheads for floor slabs]

Informative references

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

Floor structures of extraordinary design	E04B 5/43
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E04C 5/065

Light-weight girders, e.g. with precast parts (light-weight girders in general E04C3/08, E04C3/294)

Definition statement

This subclass/group covers:

Light-weight girders, e.g. with precast concrete, like the pre-fabricated

light-weight girders for floor construction

Informative references

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

Metallic girders with apertured web	E04C 3/08
Girders made of concrete combined with a girder-like structure extending laterally outside the element	E04C 3/294

E04C 5/07

Reinforcing elements of material other than metal, e.g. of glass, of plastics, or not exclusively made of metal (metal elements with non-structural coatings E04C5/01)

References relevant to classification in this group

This subclass/group does not cover:

Anchoring devices specially adapted for balconies	E04B 1/0038
Metal elements with non-structural coatings	E04C 5/015 , E04C 5/017

Informative references

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

Reinforcing elements for brick walls, inserted between brick layers	E04B 2/10 , E04B 2/20 , E04B 2/34 , E04B 2/48
Increasing or restoring the load-bearing capacity of building construction elements	E04G 23/0218

E04C 5/073

[N: Discrete reinforcing elements, e.g. fibres]

Definition statement

This subclass/group covers:

Non entirely metallic discrete reinforcing elements, i.e. suitable to be mixed with the concrete before pouring, e.g. glass or carbon fibres

Informative references

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

Filler material of fibre shape for concrete	C04B 20/0048
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Special rules of classification within this group

Non entirely metallic discrete reinforcing elements with a well-defined shape other than granular are classified in [E04C 7/00A](#); non entirely metallic discrete elements of granular shape or the shape of which is not defined are considered filler elements and are only classified in [C04B](#)

E04C 5/08

Members specially adapted to be used in prestressed constructions [N: (production of reinforced objects in general B28B23/00; prestressed structures produced in situ E04G21/12)]

Definition statement

This subclass/group covers:

Members specially adapted to be used in prestressed constructions, e.g. prestressing tendons and cables, ducts, anchoring devices.

References relevant to classification in this group

This subclass/group does not cover:

Tools or methods for in situ tensioning	E04G 21/12
Tensioning of moulded or shaped articles, at the factory	B28B 23/00 ; B28B 23/04

Informative references

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

Anchors; Connections of cables to bridge parts	E01D 19/14
Suspension cables for bridges	E01D 19/16
Increasing or restoring the load-bearing capacity of building construction elements	E04G 23/0218

E04C 5/10

Ducts

Informative references

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

Rigid pipes wound from sheets or strips of metal	F16L 9/165
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E04C 5/12

Anchoring devices (tools or methods for tensioning [N: in situ] E04G21/12)

References relevant to classification in this group

This subclass/group does not cover:

Tools or methods for tensioning in situ	E04G 21/12
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E04C 5/122

[N: the tensile members are anchored by wedge-action]

Informative references

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

Construction of stressing jacks	E04G 21/121
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E04C 5/125

[N: the tensile members are profiled to ensure the anchorage, e.g. when provided with screw-thread, bulges, corrugations]

Informative references

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

Making helical shapes on metallic bodies	B21H 3/00
Ground anchors	E02D 5/80
Coaxial connection of reinforcement bars by means of sleeves	E04C 5/165
Anchoring bolts for galleries	E21D 21/00

E04C 5/16

Auxiliary parts for reinforcements, e.g. connectors, spacers, stirrups (tools connecting reinforcing elements E04G21/12)

Definition statement

This subclass/group covers:

Auxiliary parts for reinforcements, e.g. connectors and spacers

References relevant to classification in this group

This subclass/group does not cover:

Tools for connecting reinforcing elements	E04G 21/12
Supporting devices for connector reinforcing rods for concrete walls, e.g. reinforcement connection boxes	E04G 21/125

Informative references

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

Connecting stirrup baskets	E04C 5/0622
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Special rules of classification within this group

Loose closed stirrups suitable to make prismatic or cylindrical reinforcement cages are classified in [E04C 5/0604](#).

Loose open stirrups suitable to make stirrup baskets are classified in [E04C 5/0622](#).

E04C 5/162

[N: Connectors or means for connecting parts for reinforcements (E04C5/168 takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Machines for joining reinforcing bars	E04G 21/122
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Informative references

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

Spacers connecting parts for reinforcement and spacing the reinforcements from the form	E04C 5/168
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E04C 5/163

[N: the reinforcements running in one single direction]

Definition statement

This subclass/group covers:

Connectors connecting reinforcements running in one single direction, either coaxially or only parallel to one another

E04C 5/165

[N: Coaxial connection by means of sleeves]

Informative references

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

Connections wire to wire by soldering or welding with additional connecting elements or material	B21F 15/08
Making helical shapes on metallic bodies	B21H 3/00
Connections using screw-thread elements for coaxial connections of two rods	F16B 7/182

E04C 5/166

[N: the reinforcements running in different directions]

Informative references

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

Machines for joining reinforcing bars	E04G 21/122
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E04C 5/167

[N: Connection by means of clips or other resilient elements]

Definition statement

This subclass/group covers:

Connection by means of clips or other resilient material of reinforcements running in different directions

Informative references

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

Clamping or clipping connections for rods forming a crossed-over connection	F16B 7/0493
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E04C 5/168

[N: Spacers connecting parts for reinforcements and spacing the reinforcements from the form]

Definition statement

This subclass/group covers:

Spacers connecting parts for reinforcement together, and spacing the reinforcements from the form

Informative references

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

Substantially metallic spacers	E04C 5/18
Non substantially metallic spacers	E04C 5/20

E04C 5/18

of metal or substantially of metal [N: (E04C5/168 takes precedence)]

Definition statement

This subclass/group covers:

Metallic or substantially metallic spacers spacing the reinforcements from the form or spacing the reinforcements from one another, e.g. spacers between two reinforcing grids (upper and lower) in a floor structure

References relevant to classification in this group

This subclass/group does not cover:

Spacers connecting parts for reinforcements and spacing the reinforcements from the form	E04C 5/168
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E04C 5/20

of material other than metal or with only additional metal parts, e.g. concrete or plastics spacers with metal binding wires [N: (E04C5/168 takes precedence)]

Definition statement

This subclass/group covers:

Spacers of material other than metal or with only additional metal parts, e.g. concrete or plastics spacers with metal binding wires, spacing the reinforcements from the form or spacing the reinforcements from one another, e.g. spacers between two reinforcing grids (upper and lower) in a floor structure

References relevant to classification in this group

This subclass/group does not cover:

Spacers connecting parts for reinforcements and spacing the reinforcements from the form	E04C 5/168
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