CPC COOPERATIVE PATENT CLASSIFICATION

E FIXED CONSTRUCTIONS

BUILDING

E04 BUILDING

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)

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00 **Building elements of block or other shape for the construction of parts of buildings** (of relatively thin form E04C 2/00; structural elongated elements designed for load-supporting E04C 3/00, e.g. columns or pillars E04C 3/30; manufacture or material of building bricks, stones, or the like B28, C03, C04; paving elements E01C; general building constructions E04B, e.g. walls E04B 2/00, floors E04B 5/00, roofs E04B 7/00, 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)

1/24 . {Elements for building-up floors, ceilings, roofs, arches, or beams (E04C 1/39 - E04C 1/42 take precedence; flooring E04F 15/00)}

1/34 . . {designed for use as filling elements}

1/36 . . . {between joists or girders}

1/38 . . . {in ribbed or cross-ribbed floors, ceilings, or roofs consisting of reinforced concrete}

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

1/392 . . {for ventilating, heating or cooling}

1/395 . . {for claustra, fences, planting walls, e.g. sound-absorbing (pots for vertical horticulture A01G 9/022)}

1/397 . . {serving for locating conduits (E04C 1/392 takes precedence)}

1/40 . built-up from parts of different materials, e.g. composed of layers of different materials or stones with filling material or with insulating inserts

1/41 . . composed of insulating material and load-bearing concrete, stone or stone-like material

1/42 . of glass or other transparent material {(panels made of glass bricks E04C 2/546)}

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 E04B 1/62; load-carrying floor structures E04B 5/02, E04B 5/16; roofs consisting of self-supporting slabs E04B 7/20; roof or like covering elements E04D 3/00; for lining or finishing E04F 13/00)

2002/001 . {Mechanical features of panels}

2002/002 . . {Panels with integrated lifting means, e.g. with hoisting lugs}

2002/004 . . {Panels with profiled edges, e.g. stepped, serrated}

2002/005 . {Appearance of panels}

2002/007 . . {Panels with the appearance of a brick wall}

2002/008 . . {Panels with the appearance of a natural stone wall}

2/02 . characterised by specified materials (translucent E04C 2/54)

2/04 . . of concrete or other stone-like material; of asbestos cement; {of cement and other mineral fibres}(E04C 2/26 takes precedence; material or manufacture B28, C04)

2/041 . . . {composed of a number of smaller elements, e.g. bricks, also combined with a slab of hardenable material}

2/042 . . . . {Apparatus for handling the smaller elements or the hardenable material; bricklaying machines for prefabricated panels (bricklaying machines in general E04G 21/22)}

2/043 . . . {of plaster (E04C 2/049 takes precedence)}

2/044 . . . {of concrete (E04C 2/049 takes precedence)}

2002/045 . . . . {with two parallel leaves connected by tie anchors}

2002/046 . . . . . {Flat anchors}

2002/047 . . . . . {Pin or rod shaped anchors}

2002/048 . . . . . {Bent wire anchors}

2/049 . . . {completely or partially of insulating material, e.g. cellular concrete or foamed plaster}

2/06 . . . reinforced

2/08 . . of metal, e.g. sheet metal (E04C 2/26 takes precedence)
2/10 . . of wood, fibres, chips, vegetable stems, or the like; of plastics; of foamed products ({E04C 2/049}, E04C 2/26 take precedence; {hydraulic cement and mineral fibres E04C 2/04})
2/12 . . . of solid wood
2/14 . . . . reinforced
2/16 . . . of fibres, chips, vegetable stems, or the like
2/18 . . . . with binding wires, reinforcing bars, or the like
2/20 . . . of plastics
2/205 . . . . {of foamed plastics, or of plastics and foamed plastics, optionally reinforced}
2/22 . . . . reinforced {(E04C 2/205 takes precedence)}
2/24 . . . laminated and composed of materials covered by two or more of groups E04C 2/12, E04C 2/16, E04C 2/20
2/243 . . . . {one at least of the material being insulating}
2/246 . . . . {combinations of materials fully covered by E04C 2/16 and E04C 2/20}
2/26 . . 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 {(of cement and mineral fibres E04C 2/04)}
2/28 . . . combinations of materials fully covered by groups E04C 2/04 and E04C 2/08
2/284 . . . at least one of the materials being insulating
2/288 . . . . composed of insulating material and concrete, stone or stone-like material
2/2885 . . . . . {with the insulating material being completely surrounded by, or embedded in, a stone-like material, e.g. the insulating material being discontinuous}
2/292 . . . . composed of insulating material and sheet metal
2/296 . . . . composed of insulating material and non-metallic or unspecified sheet-material (E04C 2/288 takes precedence)
2/30 . characterised by the shape or structure (translucent E04C 2/54)
2/32 . . formed of corrugated or otherwise indented sheet-like material; composed of such layers with or without layers of flat sheet-like material
2/322 . . . {with parallel corrugations}
2/324 . . . {with incisions or reliefs in the surface (E04C 2/326 takes precedence)}
2/326 . . . {with corrugations, incisions or reliefs in more than one direction of the element}
2/328 . . . {slightly bowed or folded panels not otherwise provided for}
2/34 . . composed of two or more spaced sheet-like parts (E04C 2/32 takes precedence; spacers for cavity walls E04B 2/44)
2/3405 . . . {spaced apart by profiled spacer sheets}
2002/3411 . . . . {Dimpled spacer sheets}
2002/3416 . . . . . {with cylindrical dimples}
2002/3422 . . . . . {with polygonal dimples}
2002/3427 . . . . . {with conical dimples}
2002/3433 . . . . . {with dimples extending from both sides of the spacer sheet}
2002/3438 . . . . . {with saddle-shaped dimples, e.g. eggcrate type spacer sheets}
2002/3444 . . . . {Corrugated sheets}
2002/345 . . . . . {with triangular corrugations}
2002/3455 . . . . . {with trapezoidal corrugations}
2002/3461 . . . . . {with rectangular corrugations}
2002/3466 . . . . . {with sinusoidal corrugations}
2002/3472 . . . . {with multiple layers of profiled spacer sheets}
2002/3477 . . . {spaced apart by tubular elements parallel to the sheets}
2002/3483 . . . {spaced apart by spacers stamped from the sheets}
2002/3488 . . . {spaced apart by frame like structures}
2002/3494 . . . {Apparatus for making profiled spacer sheets}
2/36 . . . spaced apart by transversely-placed strip material, e.g. honeycomb panels (honeycomb or other core members for layered products B32B)
2/365 . . . . {by honeycomb structures}
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. E04B 2/00)
2/382 . . . {with a frame of concrete or other stone-like substance}
2/384 . . . {with a metal frame}
2/386 . . . {with a frame of unreconstituted or laminated wood}
2/388 . . . {with a frame of other materials, e.g. fibres, plastics}
2/40 . . composed of a number of smaller components rigidly or movably connected together, e.g. interlocking, hingedly connected {of particular shape, e.g. not rectangular of variable shape or size, e.g. flexible or telescopic panels (E04C 2/041 takes precedence)}
2/405 . . . {composed of two or more hingedly connected parts}
2/42 . . Gratings; Grid-like panels (reinforcing elements E04C 5/00; built-in gratings E04F 19/10; gratings in general F16S 3/00)
2/421 . . . {made of bar-like elements, e.g. bars discontinuous in one direction}
2/422 . . . . {with continuous bars connecting at crossing points of the grid pattern}
2/423 . . . . . {with notches}
2/425 . . . . . {made of perforated bars}
2/426 . . . . {with continuous bars that remain unconnected at crossing points of the grid pattern, e.g. with undulating bars}
2/427 . . . {Expanded metal or other monolithic gratings}
2/428 . . . {Separate connecting means, e.g. connecting gratings to underlying structure}
2/44 . {characterised by the purpose}
2/46 . . {specially adapted for making walls (E04C 2/52, E04C 2/54 take precedence; structure of slab-shaped elements E04B 1/02; walls of elements of relatively thin form E04B 2/72)}
2/48 . . {as high as or higher than the room, i.e. having provisions concerning the connection with at least two floors (E04C 2/52 and E04C 2/54 take precedence)}

2/50 . . {Self-supporting slabs specially adapted for making floors ceilings, or roofs, e.g. able to be loaded (E04C 2/52, E04C 2/54 take precedence; structures of slab-shaped elements E04B 1/02; floor structures E04B 5/00; roofs consisting of self-supporting slabs E04B 7/20; ceilings E04B 9/00; roof coverings E04D; floor coverings E04F 15/00)}

2/52 . . with special adaptations for auxiliary purposes, e.g. serving for locating conduits (E04C 2/54 takes precedence; block-shaped elements therefor E04C 1/39; floor structures incorporating ducts E04B 5/48)

2/521 . . . {serving for locating conduits; for ventilating, heating or cooling}

2/523 . . . . {for ventilating}

2/525 . . . . {for heating or cooling (solar heat collectors F24S 10/00; heat storage F28D 20/00)}

2/526 . . . {with adaptations not otherwise provided for, for connecting, transport; for making impervious or hermetic, e.g. sealings}

2/528 . . . . {Impervious or hermetic panels not otherwise provided for}

2/54 . Slab-like translucent elements (floors for transmitting light E04B 5/46; translucent or open-work ceilings E04B 9/32, E04B 9/34; translucent roof coverings E04D 3/06, E04D 3/28)

2/543 . . {Hollow multi-walled panels with integrated webs}

2/546 . . {made of glass bricks}

3/00 Structural elongated elements designed for load-supporting (as building aids E04G)

3/005 . {Girders or columns that are rollable, collapsible or otherwise adjustable in length or height (girders as supporting members for forms E04G 11/54)}

3/02 . Joists; Girders, trusses, or trusslike structures, e.g. prefabricated; Lintels; Transoms; {Braces}(E04C 3/38 takes precedence; for structures characterised by movable, separable, or collapsible parts E04B 1/343; {braced purlins E04B 7/024})

2003/023 . . {Lintels}

2003/026 . . {Braces}

3/04 . . of metal (E04C 3/29 takes precedence; as reinforcing elements E04C 5/06; manufacture B21)

2003/0404 . . . {beams, girders, or joists characterised by cross-sectional aspects}

2003/0408 . . . . {characterised by assembly or the cross-section}

2003/0413 . . . . . {being built up from several parts}

2003/0417 . . . . . {demountable}

2003/0421 . . . . . {comprising one single unitary part}

2003/0426 . . . . {characterised by material distribution in cross section}

2003/043 . . . . . {the hollow cross-section comprising at least one enclosed cavity}

2003/0434 . . . . . {the open cross-section free of enclosed cavities}

2003/0439 . . . . . {the cross-section comprising open parts and hollow parts}

2003/0443 . . . . {characterised by substantial shape of the cross-section}

2003/0447 . . . . . {circular- or oval-shaped}

2003/0452 . . . . . {H- or I-shaped}

2003/0456 . . . . . {hollow flanged, i.e. "dogbone" metal beams}

2003/046 . . . . . {L- or T-shaped}

2003/0465 . . . . . {square- or rectangular-shaped}

2003/0469 . . . . . {triangular-shaped}

2003/0473 . . . . . {U- or C-shaped}

2003/0478 . . . . . {X-shaped}

2003/0482 . . . . . {Z- or S-shaped}

2003/0486 . . . {Truss like structures composed of separate truss elements}

2003/0491 . . . . {the truss elements being located in one single surface or in several parallel surfaces}

2003/0495 . . . . {the truss elements being located in several non-parallel surfaces}

3/06 . . . with substantially solid, i.e. unapertured, web (E04C 3/10, E04C 3/11 take precedence {honeycomb girders E04C 3/083})

3/065 . . . . {with special adaptations for the passage of cables or conduits through the web}

3/07 . . . . at least partly of bent or otherwise deformed strip- or sheet-like material

3/08 . . . with apertured web, e.g. with a web consisting of bar-like components; Honeycomb girders (E04C 3/10, E04C 3/11 take precedence)

3/083 . . . . {Honeycomb girders; Girders with apertured solid web}

3/086 . . . . . {of the castellated type}

3/09 . . . . at least partly of bent or otherwise deformed strip- or sheet-like material

3/10 . . . prestressed

3/11 . . . with non-parallel upper and lower edges, e.g. roof trusses (arched girders, portal frames E04C 3/38)

3/12 . . of wood, e.g. with reinforcements, with tensioning members (E04C 3/292 takes precedence)

3/122 . . . {Laminated}

3/125 . . . {End caps therefor}

3/127 . . . {with hollow cross section}

3/14 . . . with substantially solid, i.e. unapertured, web ({E04C 3/127,} E04C 3/17, E04C 3/18 take precedence)

3/145 . . . . {with special adaptations for the passage of cables or conduits through the web, e.g. reinforcements}

3/16 . . . with apertured web, e.g. trusses (E04C 3/17, E04C 3/18 take precedence)

3/17 . . . with non-parallel upper and lower edges, e.g. roof trusses

3/18 . . . with metal {or other} reinforcements or tensioning members

3/185 . . . . {Synthetic reinforcements}

3/20 . . of concrete or other stone-like material, e.g. with reinforcements or tensioning members (reinforcing elements E04C 5/00)

3/205 . . . {with apertured web, e.g. frameworks, trusses (E04C 3/26 takes precedence)}

3/22 . . . built-up by elements jointed in line

3/26 . . . prestressed (E04C 3/22, E04C 3/29 take precedence; prestressing members E04C 5/08)

3/28 . . of materials not covered by groups E04C 3/04 - E04C 3/20

3/285 . . . {of glass}

3/29 . . built-up from parts of different material, {i.e. composite structures}
3/291 . . . {with apertured web}
3/292 . . . the materials being wood and metal
3/293 . . . the materials being steel and concrete (concrete with internal reinforcements or tensioning members E04C 3/20)
3/294 . . . . of concrete combined with a girder-like structure extending laterally outside the element (light weight girders used as reinforcement E04C 5/065; as part of a floor structure E04B 5/23)
3/30 . Columns; Pillars; Struts (not designed for end loading E04C 3/02; posts, masts, as independent structures E04H 12/00)
3/32 . . of metal (E04C 3/36 takes precedence)
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 (E04C 3/36 takes precedence)
3/36 . . of materials not covered by groups E04C 3/32 or E04C 3/34; of a combination of two or more materials
3/38 . Arched girders or portal frames (straight girders able to be bent E04C 3/02; inflatable E04H 15/20)
3/40 . . of metal (E04C 3/46 takes precedence)
3/42 . . of wood, e.g. units for rafter roofs (E04C 3/46 takes precedence)
3/44 . . of concrete or other stone-like material, e.g. with reinforcements or tensioning members (E04C 3/46 takes precedence)
3/46 . . of materials not covered by groups E04C 3/40 - E04C 3/44; of a combination of two or more materials

5/00 Reinforcing elements, e.g. for concrete; Auxiliary elements therefor ({methods or devices for making reinforcing materials B21D;} material composition {C04B,} C21, C22)

NOTES

1. In this group, the following terms or expressions are used with the meanings indicated:
   - "reinforcing" means increasing any physical strength characteristic of the end product, e.g. compressive or flexural strength;
   - "elements" includes relatively large bodies, e.g. steel bars, as well as relatively small discrete bodies of any form, e.g. glass fibres.
2. Discrete reinforcing elements, which are small compared with the reinforced building element, only characterised by their composition are classified in C04B, e.g. steel fibres C04B 14/48, plastic elements with a shape other than granular or fibrous C04B 16/12

5/01 . Reinforcing elements of metal, e.g. with non-structural coatings {(E04C 5/08 takes precedence)}
5/012 . . {Discrete reinforcing elements, e.g. fibres}
5/015 . . {Anti-corrosion coatings or treating compositions, e.g. containing waterglass or based on another metal (coating of discrete reinforcing elements C04B 20/10)}
5/017 . . . {Anti-corrosion coatings or treating compositions containing cement}
5/02 . . of low bending resistance
5/03 . . . with indentations, projections, ribs, or the like, for augmenting the adherence to the concrete
5/04 . . . Mats ({combined with reinforcing elements protruding out of the plane of the mat E04C 5/0627; three-dimensional mats E04C 5/0636}; bases for plaster E04F 13/04)
5/06 . . of high bending resistance, i.e. of essentially three-dimensional extent, e.g. lattice girders {(anchorage devices specially adapted for balconies E04B 1/0038; supporting devices for connector reinforcing rods for concrete walls E04G 21/125)}
5/0604 . . . {Prismatic or cylindrical reinforcement cages composed of longitudinal bars and open or closed stirrup rods (E04C 5/0631 takes precedence)}
5/0609 . . . . {Closed cages composed of two or more coacting cage parts, e.g. transversally hinged or nested parts}
5/0613 . . . . {Closed cages made of one single bent reinforcement mat}
5/0618 . . . . {Closed cages with spiral- or coil-shaped stirrup rod}
5/0622 . . . . {Open cages, e.g. connecting stirrup baskets (E04C 5/0609 takes precedence)}
5/0627 . . . {Three-dimensional reinforcements composed of a prefabricated reinforcing mat combined with reinforcing elements protruding out of the plane of the mat (E04C 5/0645 takes precedence)}
5/0631 . . . . {Reinforcing mats combined with separate prefabricated reinforcement cages or girders (E04C 5/064 takes precedence)}
5/0636 . . . {Three-dimensional reinforcing mats composed of reinforcing elements laying in two or more parallel planes and connected by separate reinforcing parts (E04C 5/0645 takes precedence)}
5/064 . . . . {the reinforcing elements in each plane being formed by, or forming a, mat of longitunal and transverse bars}
5/0645 . . . {Shear reinforcements, e.g. shearheads for floor slabs}
5/065 . . . Light-weight girders, e.g. with precast parts (light-weight girders in general E04C 3/08, E04C 3/294)
5/0653 . . . . {with precast parts}
5/0656 . . . . . {with lost formwork}
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 E04C 5/01)
5/073 . . {Discrete reinforcing elements, e.g. fibres}
5/076 . . . {Specially adapted packagings therefor, e.g. for dosing}
5/08 . Members specially adapted to be used in prestressed constructions {(production of reinforced objects in general B28B 23/00; prestressed structures produced in situ E04G 21/12)}
5/085 . . {Tensile members made of fiber reinforced plastics}
5/10 . . Ducts
5/12 . . Anchoring devices (tools or methods for tensioning {in situ} E04G 21/12)

5/122 . . . {the tensile members are anchored by wedge-action}

5/125 . . . {the tensile members are profiled to ensure the anchorage, e.g. when provided with screw-thread, bulges, corrugations}

5/127 . . . {The tensile members being made of fiber reinforced plastics}

5/16 . Auxiliary parts for reinforcements, e.g. connectors, spacers, stirrups ({E04C 5/06 takes precedence;} tools connecting reinforcing elements E04G 21/12)

5/161 . . {Protective caps for the ends of reinforcing bars}

5/162 . . {Connectors or means for connecting parts for reinforcements (E04C 5/168 takes precedence)}

5/163 . . . {the reinforcements running in one single direction}

5/165 . . . . {Coaxial connection by means of sleeves}

5/166 . . . {the reinforcements running in different directions}

5/167 . . . . {Connection by means of clips or other resilient elements}

5/168 . . {Spacers connecting parts for reinforcements and spacing the reinforcements from the form}

5/18 . . {Spacers} of metal or substantially of metal {(E04C 5/168 takes precedence)}

5/20 . . of material other than metal or with only additional metal parts, e.g. concrete or plastics spacers with metal binding wires {(E04C 5/168 takes precedence)}

5/201 . . . {Spacer blocks with embedded separate holding wire or clips}

5/203 . . . {Circular and spherical spacers}

5/205 . . . {Ladder or strip spacers}

5/206 . . . {Spacers having means to adapt the spacing distance}

5/208 . . . {Spacers especially adapted for cylindrical reinforcing cages}