

CPC COOPERATIVE PATENT CLASSIFICATION

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](#))

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)	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)}
1/24	. {Elements for building-up floors, ceilings, roofs, arches, or beams (E04C 1/39 - E04C 1/42 take precedence; flooring E04F 15/00)}	2/043	. . . {of plaster (E04C 2/049 takes precedence)}
1/34	. . {designed for use as filling elements}	2/044	. . . {of concrete (E04C 2/049 takes precedence)}
1/36	. . . {between joists or girders}	2002/045	. . . . {with two parallel leaves connected by tie anchors}
1/38	. . . {in ribbed or cross-ribbed floors, ceilings, or roofs consisting of reinforced concrete}	2002/046	. . . . . {Flat anchors}
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	2002/047	. . . . . {Pin or rod shaped anchors}
		2002/048	. . . . . {Bent wire anchors}
1/392	. . {for ventilating, heating or cooling}	2/049	. . . {completely or partially of insulating material, e.g. cellular concrete or foamed plaster}
1/395	. . {for claustra, fences, planting walls, e.g. sound-absorbing (pots for vertical horticulture A01G 9/022)}	2/06	. . . reinforced
		2/08	. . of metal, e.g. sheet metal (E04C 2/26 takes precedence)
1/397	. . {serving for locating conduits (E04C 1/392 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 })
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	2/12	. . . of solid wood
1/41	. . composed of insulating material and load-bearing concrete, stone or stone-like material	2/14	. . . . reinforced
1/42	. of glass or other transparent material {(panels made of glass bricks E04C 2/546)}	2/16	. . . of fibres, chips, vegetable stems, or the like
		2/18	. . . . with binding wires, reinforcing bars, or the like
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)	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
2002/001	. {Mechanical features of panels}	2/243	. . . . {one at least of the material being insulating}
2002/002	. . {Panels with integrated lifting means, e.g. with hoisting lugs}	2/246	. . . . {combinations of materials fully covered by E04C 2/16 and E04C 2/20 }
2002/004	. . {Panels with profiled edges, e.g. stepped, serrated}		

- 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 [F24J 2/04](#); 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 {dismountable}
- 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 other materials not covered by groups [E04C 3/40](#) - [E04C 3/44](#)
- 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 or 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 other materials not covered by groups [E04C 3/40](#) - [E04C 3/44](#); 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 other 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](#); arrangements of reinforcing elements, see the relevant subclasses)
- NOTES**
- 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.
 - 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 longitudinal 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}

E04C

- 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}