

# CPC COOPERATIVE PATENT CLASSIFICATION

## B22C FOUNDRY MOULDING (moulding refractory materials in general [B28B](#))

### NOTE

This subclass covers:

- the making of moulds for casting metals or of other refractory moulds;
- selection or preparation of materials therefor;
- the necessary patterns, processes, machines, accessory devices or tools.

### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">B22C 3/02</a>	covered by	<a href="#">B22C 3/00</a>
<a href="#">B22C 5/13</a>	covered by	<a href="#">B22C 5/12</a>
<a href="#">B22C 7/05</a>	covered by	<a href="#">B22C 7/04</a>
<a href="#">B22C 9/11</a>	covered by	<a href="#">B22C 9/10</a>
<a href="#">B22C 9/14</a>	covered by	<a href="#">B22C 9/12</a>
<a href="#">B22C 9/16</a>	covered by	<a href="#">B22C 9/12</a>
<a href="#">B22C 15/264 - B22C 15/276</a>	covered by	<a href="#">B22C 15/23</a>
<a href="#">B22C 19/01</a>	covered by	<a href="#">B22C 19/00</a>

<b>1/00</b>	<b>Compositions of refractory mould or core materials; Grain structures thereof (refractory materials in general <a href="#">C04B 35/00</a>); Chemical or physical features in the formation or manufacture of moulds</b>	1/2213 . . . . . {Polyalkenes}
		1/222 . . . . . {Polyacrylates}
		1/2226 . . . . . {Polymers containing halogens}
		1/2233 . . . . . {obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds}
1/02	. characterised by additives for special purposes, e.g. indicators, break-down additives	
1/04	. . for protection of the casting, e.g. against decarbonisation	1/224 . . . . . {Furan polymers ( <a href="#">B22C 1/2273</a> takes precedence)}
1/06	. . . for casting extremely oxidisable metals	1/2246 . . . . . {Condensation polymers of aldehydes and ketones ( <a href="#">B22C 1/224</a> , <a href="#">B22C 1/2273</a> take precedence)}
1/08	. . for decreasing shrinkage of the mould, e.g. for investment casting	
1/10	. . for influencing the hardening tendency of the mould material (influencing the hardening tendency of the binding agent only <a href="#">B22C 1/16</a> )	1/2253 . . . . . {with phenols}
1/12	. . for manufacturing permanent moulds or cores	1/226 . . . . . {Polyepoxides}
1/14	. . for separating the pattern from the mould	1/2266 . . . . . {Polyesters; Polycarbonates}
1/16	. characterised by the use of binding agents; Mixtures of binding agents	1/2273 . . . . . {Polyurethanes; Polyisocyanates}
1/162	. . {use of a gaseous treating agent for hardening the binder}	1/228 . . . . . {Polyamides}
1/165	. . {in the manufacture of multilayered shell moulds}	1/2286 . . . . . {Polyethers}
1/167	. . {Mixtures of inorganic and organic binding agents}	1/2293 . . . . . {Natural polymers ( <a href="#">B22C 1/24</a> , <a href="#">B22C 1/26</a> take precedence)}
1/18	. . of inorganic agents ( <a href="#">B22C 1/162</a> takes precedence)}	1/24 . . . of oily or fatty substances; of distillation residues therefrom
1/181	. . . {Cements, oxides or clays}	1/26 . . . of carbohydrates; of distillation residues therefrom
1/183	. . . {Sols, colloids or hydroxide gels}	
1/185	. . . {containing phosphates, phosphoric acids or its derivatives}	<b>3/00</b> <b>Selection of compositions for coating the surfaces of moulds, cores, or patterns</b>
1/186	. . . {containing ammonium or metal silicates, silica sols}	<b>5/00</b> <b>Machines or devices specially designed for dressing or handling the mould material so far as specially adapted for that purpose (of general applicability, see the relevant places, e.g. for material with water-setting properties <a href="#">B28C</a>)</b>
1/188	. . . . {Alkali metal silicates}	5/02 . Dressing by centrifuging essentially or additionally
1/20	. . of organic agents	5/04 . by grinding, blending, mixing, kneading, or stirring
1/205	. . . {of organic silicon or metal compounds, other organometallic compounds}	5/0404 . . {Stirring by using vibrations while grinding}
1/22	. . . of resins or rosins	5/0409 . . {Blending, mixing, kneading or stirring; Methods therefor ( <a href="#">B22C 5/0486</a> takes precedence)}
1/2206	. . . . {obtained by reactions only involving carbon-to-carbon unsaturated bonds}	5/0413 . . . {Horizontal mixing and conveying units, e.g. the unit being rotatable about a vertical axis, or having a supplementary mixing house with a vertical axis at its end}

5/0418	. . . . {Details concerning the method}	7/062	. . {Sealing means}
5/0422	. . . {Devices having a fixed receptacle with rotating tools, some or all of these tools being rolls or balls loosely mounted on their axis or loose balls in contact with the side wall or the bottom of the receptacle, e.g. with aerating means; "Devices of the Muller type"}	7/065	. . {Venting means}
5/0427	. . . . {having only one vertical tool-driving shaft}	7/067	. . {Ejector elements}
5/0431	. . . . {having at least two vertical tool-driving shafts}	<b>9/00</b>	<b>Moulds or cores (uniquely adapted to particular casting processes <a href="#">B22D</a>); Moulding processes (processes involving the use of particular moulding machines, <a href="#">see the relevant groups for these machines</a>)</b>
5/0436	. . . . {having a horizontal tool-driving shaft}	9/02	. Sand moulds or like moulds for shaped castings
5/044	. . . {Devices having a vertical stirrer shaft in a fixed receptacle ( <a href="#">B22C 5/0422</a> takes precedence)}	9/03	. . formed by vacuum-sealed moulding
5/0445	. . . . {the material flowing continuously through the device}	9/04	. . Use of lost patterns
5/045	. . . {Devices having a horizontal stirrer shaft in a fixed receptacle ( <a href="#">B22C 5/0422</a> takes precedence)}	9/043	. . . {Removing the consumable pattern}
5/0454	. . . {with bottom disc rotating about a vertical axis or with receptacle rotating about a vertical or steeply inclined axis, e.g. with fixed or driven tools, such as rolls}	9/046	. . . {Use of patterns which are eliminated by the liquid metal in the mould}
5/0459	. . . {with a receptacle rotating about a horizontal or slightly inclined axis, e.g. with fixed or rotating tools}	9/06	. Permanent moulds for shaped castings ( <a href="#">moulds for ingots <a href="#">B22D 7/06</a></a> )
5/0463	. . . {Plants}	9/061	. . {Materials which make up the mould}
5/0468	. . . . {having feeding moulds, e.g. using gas}	9/062	. . {Mechanisms for locking or opening moulds}
5/0472	. . . {Parts; Accessories; Controlling; Feeding; Discharging; Proportioning}	9/064	. . {Locating means for cores}
5/0477	. . . {Mixing while transporting the mixture on an endless belt, e.g. with driven stirring elements}	9/065	. . {Cooling or heating equipment for moulds}
5/0481	. . . {using vibrations}	9/067	. . {Venting means for moulds}
5/0486	. . {Movable devices for cutting or mixing material laying on the ground}	9/068	. . {Semi-permanent moulds}
5/049	. . . {using rotating tools}	9/08	. Features with respect to supply of molten metal, e.g. ingates, circular gates, skim gates
5/0495	. . . . {combined with another operation, e.g. sieving, or with means for picking up material from the ground}	9/082	. . {Sprues, pouring cups}
5/06	. by sieving or magnetic separating	9/084	. . {Breaker cores}
5/08	. by sprinkling, cooling, or drying	9/086	. . {Filters}
5/085	. . {Cooling or drying the sand together with the castings}	9/088	. . {Feeder heads}
5/10	. by dust separating	9/10	. Cores; Manufacture or installation of cores ( <a href="#">(breaker cores <a href="#">B22C 9/084</a>)</a> )
5/12	. for filling flasks ( <a href="#">in combination with compacting <a href="#">B22C 15/20</a> - <a href="#">B22C 15/28</a></a> )	9/101	. . {Permanent cores}
5/14	. Equipment for storing or handling the dressed mould material, forming part of a plant for preparing such material	9/103	. . {Multipart cores}
5/16	. . with conveyors or other equipment for feeding the material	9/105	. . {Salt cores}
5/18	. Plants for preparing mould materials	9/106	. . {Vented or reinforced cores}
5/185	. . {comprising a wet reclamation step}	9/108	. . {Installation of cores}
<b>7/00</b>	<b>Patterns; Manufacture thereof so far as not provided for in other classes</b>	9/12	. Treating moulds or cores, e.g. drying, hardening
7/005	. {Adjustable, sectional, expandable or flexible patterns}	9/123	. . {Gas-hardening}
7/02	. Lost patterns	9/126	. . {Hardening by freezing}
7/023	. . {Patterns made from expanded plastic materials}	9/18	. Finishing
7/026	. . . {by assembling preformed parts ( <a href="#">joining of plastics, in general <a href="#">B29C 65/00</a></a> )}	9/20	. Stack moulds, i.e. arrangement of multiple moulds or flasks
7/04	. Pattern plates	9/22	. Moulds for peculiarly-shaped castings
7/06	. Core boxes	9/24	. . for hollow articles
		9/26	. . . for ribbed tubes; for radiators
		9/28	. . for wheels, rolls, or rollers ( <a href="#">(B22D 15/005 takes precedence)</a> )
		9/30	. . for chains
		<b>Moulding machines for making moulds or cores</b>	
		<b>11/00</b>	<b>Moulding machines characterised by the relative arrangement of the parts of same</b>
		11/02	. Machines in which the moulds are moved during a cycle of successive operations
		11/04	. . by a horizontal rotary table or carrier
		11/06	. . by a vertical rotary carrier
		11/08	. . by non-rotary conveying means, e.g. by travelling platforms
		11/10	. with one or more flasks forming part of the machine, from which only the sand moulds made by compacting are removed
		11/12	. Moulding machines able to travel

<b>13/00</b>	<b>Moulding machines for making moulds or cores of particular shapes</b>
13/02	• equipped with templates, e.g. for sweeping operation
13/04	• . with rotary templates, e.g. arranged on a pillar
13/06	• . with non-rotary template and rotary flask
13/08	• for shell moulds or shell cores
13/085	• . {by investing a lost pattern}
13/10	• for pipes or elongated hollow articles
13/12	• for cores
13/14	• . by sweeping, turning, or coating
13/16	• . by pressing through a die
<b>15/00</b>	<b>Moulding machines characterised by the compacting mechanism; Accessories therefor</b>
15/02	• Compacting by pressing devices only
15/04	• . involving muscle power, e.g. hand-operated levers
15/06	• . involving mechanical gearings, e.g. crank gears ( <a href="#">B22C 15/04 takes precedence</a> )
15/08	• . involving pneumatic or hydraulic mechanisms
15/10	• Compacting by jarring devices only
15/12	• . involving mechanical gearings
15/14	• . involving pneumatic or hydraulic mechanisms
15/16	• . . the machine having special provision for reducing shock to its frame
15/18	• . . . by means of separate shock-absorbers
15/20	• Compacting by centrifugal forces only, e.g. in sand slingers
15/23	• Compacting by gas pressure or vacuum
15/24	• . involving blowing devices in which the mould material is supplied in the form of loose particles
15/245	• . . {Blowing tubes}
15/26	• . involving propulsion devices in which the mould material is supplied in the shape of a compacted column or the like
15/28	• Compacting by different means acting simultaneously or successively, e.g. preliminary blowing and finally pressing
15/30	• . by both pressing and jarring devices
15/32	• . . involving mechanical gearing only
15/34	• . . involving pneumatic or hydraulic mechanisms only
<b>17/00</b>	<b>Moulding machines characterised by the mechanism for separating the pattern from the mould or for turning over the flask or the pattern plate</b>
17/02	• Moulding machines with pin lifting arrangement
17/04	• Drop-plate moulding machines
17/06	• Moulding machines using stripping plates; Stripping plates
17/08	• Moulding machines with mechanisms to turn over the pattern plate on the mould around a horizontal axis
17/10	• . Turning-over pattern plate and flask only ( <a href="#">B22C 17/14 takes precedence</a> )
17/12	• . Turning-over pattern plate, flask, and compacting device as a unit ( <a href="#">B22C 17/14 takes precedence</a> )
17/14	• . arranged to one side of the mould table, so-called roll-over table moulding machines
<b>19/00</b>	<b>Components or accessories for moulding machines</b>
19/02	• Mould tables

19/04	• Controlling devices specially designed for moulding machines
19/06	• Devices for rapping or loosening the pattern
<b>21/00</b>	<b>Flasks; Accessories therefor (<a href="#">stripping plates B22C 17/06</a>)</b>
21/01	• for vacuum-sealed moulding
21/02	• Sectional flasks, i.e. with divided, articulated, or interchangeable side sections
21/04	• Upset frames; Bottom boards or mould boards ( <a href="#">pattern plates B22C 7/04</a> )
21/06	• . Bottom boards or mould boards
21/08	• Clamping equipment
21/10	• Guiding equipment
21/12	• Accessories
21/14	• . for reinforcing or securing moulding materials or cores, e.g. gagers, chaplets, pins, bars
<b>23/00</b>	<b>Tools; Devices not mentioned before for moulding</b>
23/02	• Devices for coating moulds or cores
<b>25/00</b>	<b>Foundry moulding plants (<a href="#">for preparing mould materials B22C 5/18</a>; <a href="#">in combination with casting plants B22D 47/02</a>)</b>