

ECLA EUROPEAN CLASSIFICATION

B28B

SHAPING CLAY OR OTHER CERAMIC COMPOSITIONS, SLAG, OR MIXTURES CONTAINING CEMENTITIOUS MATERIAL, e.g. PLASTER (foundry moulding B22C; working stone or stone-like material B28D; shaping of substances in a plastic state, in general B29C; making layered products not composed wholly of these substances B32B; shaping in situ, see the relevant classes of section E)

[N: **WARNING**

[N9509] [C9901]The following IPC group(s) are not used in the internal ECLA classification scheme. Subject matter covered by these groups is classified in the following groups:

[B28B23/08](#) covered by [B28B21/60](#), [B28B23/06](#)
]

Note

In this subclass, the following term is used with the meaning indicated:

- "the material" means:
 - a. clay or other ceramic compositions;
 - b. slag;
 - c. mixtures with water-setting properties given by clay, cementitious material, or slag.

B28B1/00

Producing shaped [N: prefabricated] articles from the material (using presses [B28B3/00](#); shaping on moving conveyers [B28B5/00](#); producing tubular articles [B28B21/00](#); [N: producing articles with embedded elements [B28B23/00](#)])

B28B1/00A

- [N: Rapid manufacturing of 3D objects by additive depositing, agglomerating or laminating of material (selective deposition modelling of metallic powder B22F3/00S; rapid manufacturing of 3D objects in general and in particular of plastics B29C67/00R)] [N1204]

B28B1/00B

- [N: assembled from preformed elements]

B28B1/00C

- [N: Devices for shaping artificial aggregates from ceramic mixtures or from mixtures containing hydraulic binder (from slag [C04B5/00](#); composition of artificial aggregates [C04B18/02](#))]

B28B1/00D

- [N: Devices or processes for obtaining articles having a marble appearance (producing decorative effects [B44C](#); design of stone surfaces, e.g. marble, [B44F9/04](#))]

B28B1/00E

- [N: by freezing the material]

B28B1/00F

- [N: made from two or more materials having different characteristics or properties (casting for producing layered articles [B28B1/16](#); feeding several successive layers, optionally of different materials [B28B13/02D2](#); coating [B28B11/04](#); applying material to surfaces to form a permanent layer thereon [B28B19/00](#))] [N9710]

B28B1/02

- by turning or jiggering [N: in moulds or moulding surfaces on rotatable supports]

- B28B1/02A . . [N: Potters wheels] [N1204]
- B28B1/04 . by tamping or ramming (followed by pressing [B28B3/02](#))
- B28B1/04B . . [N: combined with vibrating or jolting]
- B28B1/08 . by vibrating or jolting [N: (of moulding sand [B22C15/10](#); of concrete in general [E04G21/06C](#))]
- B28B1/08A . . [N: Vibration-absorbing means]
- B28B1/08F . . [N: combined with a vacuum, e.g. for moisture extraction (in general [E04G21/06B](#))]
- B28B1/08G . . [N: the vibrating moulds or cores being moved horizontally for making strands of moulded articles]
- B28B1/08G1 . . . [N: Introducing non-longitudinal reinforcing elements, e.g. spirally shaped] [N1204]
- B28B1/087 . . by means acting on the mould; [N: Fixation thereof to the mould] [N9509]
- B28B1/087B . . . [N: the mould being placed on vibrating or jolting supports, e.g. moulding tables] [N9509]
- B28B1/093 . . by means directly acting on the material, e.g. by cores wholly or partly immersed in the material [N: or elements acting on the upper surface of the material] ([N: [B28B1/08G](#) takes precedence;] internal vibrators for compacting concrete in situ [E04G21/08](#)) [N9509]
- B28B1/093B . . . [N: using only elements wholly or partly immersed in the material, e.g. cores] [N9509]
- B28B1/10 . . and applying pressure otherwise than by the use of presses
- B28B1/10B . . . [N: this load also being actively vibrated or jolted]
- B28B1/14 . by simple casting, the material being neither forcibly fed nor positively compacted (for molten material [B28B1/54](#))
- B28B1/16 . . for producing layered articles (coating [B28B11/04](#))
- B28B1/20 . by centrifugal or rotational casting (slip-casting involving rotation of the mould [B28B1/28](#); for molten material [B28B1/54](#))
- B28B1/24 . by injection moulding [N:(injection moulding of ceramic slips[B28B1/26C](#); of tubular articles[B28B21/38](#))]
- B28B1/26 . by slip-casting, i.e. by casting a suspension or dispersion of the material in a liquid-absorbent or porous mould, the liquid being allowed to soak into or pass through the walls of the mould; Moulds therefor ([B28B1/52](#) takes precedence); [N: specially for manufacturing articles starting from a ceramic slip; Moulds therefor (of tubular articles [B28B21/08](#))]
- B28B1/26B . . [N: Moulds therefor (absorbent moulds in general [B28B7/34C](#))]
- B28B1/26B2 . . . [N: Mould materials; Manufacture of moulds or parts thereof]
- B28B1/26B2B [N: Plastics] [N0108]
- B28B1/26B2C [N: Plaster] [N0108]
- B28B1/26C . . [N: pressure being applied on the slip in the filled mould or on the moulded article in the mould, e.g. pneumatically, by compressing slip in a closed mould]
- B28B1/26C2 . . . [N: Means for counteracting the pressure being applied on the slip or on the moulded article in the mould, e.g. means for clamping the moulds parts together in a frame-like structure (fastening means, clamping means for mould parts in general [B28B7/00B5](#))] [N9811]

- B28B1/26D . . [N: in moulds or on moulding surfaces supported by, or formed in or by, conveyers]
- B28B1/26E . . [N: by dipping moulding surfaces in the slip (in general [B28B1/38](#))]
- B28B1/26F . . [N: by electrophoresis (electrophoresis in general [C25](#))]
- B28B1/28 . . involving rotation of the mould [N: about a centrifugal axis]

- B28B1/29 . . by profiling or strickling the material in open moulds or on moulding surfaces [N: (in rotary moulds [B28B1/02](#); by means of profiled rollers [B28B3/12](#), [B28B3/12B](#))]

- B28B1/30 . . by applying the material on to a core or other moulding surface to form a layer thereon (to form a permanent layer [B28B19/00](#))
- B28B1/32 . . by projecting, e.g. spraying (spraying in general [B05B](#), D)
- B28B1/34 . . . by centrifugal force [N: (centrifugally acting implements for applying plaster or the like to walls [E04F21/10](#))] [[C9611](#)]
- B28B1/38 . . by dipping (in general [B05C](#), D; [N: shaping from synthetic resin [B29C41/14](#)] [[C1110](#)])
- B28B1/40 . . by wrapping, e.g. winding
- B28B1/42 . . . using mixtures containing fibres, e.g. for making sheets by slitting the wound layer

- B28B1/44 . . by forcing cores into filled moulds for forming hollow articles
- B28B1/44A . . [N: Hollow punches or cores] [[N1204](#)]

- B28B1/48 . . by removing material from solid section preforms for forming hollow articles, e.g. by punching or boring

- B28B1/50 . . specially adapted for producing articles of expanded material, e.g. cellular concrete (chemical aspects [N: or making expanded aggregate] [C04B](#))
- B28B1/50B . . [N: Moulds therefor]
- B28B1/50B2 . . . [N: with means for, or adapted for, cutting the moulded article into pieces (in general [B28B7/14](#))]

- B28B1/52 . . specially adapted for producing articles from mixtures containing fibres, [N: e.g. asbestos cement] (by wrapping on +o mandrels [B28B1/42](#))
- B28B1/52B . . [N: from dry mixtures to which a setting agent is applied after forming ([B28B1/52F](#), [B28B1/52G](#) take precedence)]
- B28B1/52C . . [N: for producing multi-layered articles ([B28B1/52F](#), [B28B1/52G](#) take precedence)]
- B28B1/52D . . [N: containing metal fibres ([B28B1/52F](#), [B28B1/52G](#) take precedence)]
- B28B1/52E . . [N: containing organic fibres, e.g. wood fibres ([B28B1/52F](#), [B28B1/52G](#) take precedence)]
- B28B1/52F . . [N: by delivering the materials on a conveyer of the endless-belt type]
- B28B1/52G . . [N: by delivering the materials on a rotating drum, e.g. a sieve drum, from which the materials are picked up by a felt]
- B28B1/52Z . . [N: for producing corrugated sheets ([B28B1/52F](#), [B28B1/52G](#) take precedence)]

- B28B1/54 . . specially adapted for producing articles from molten material, e.g. slag [N: refractory ceramic materials] (chemical aspects [C04B](#); [N: from molten bituminous material [B29C](#)])

- B28B3/00** **Producing shaped articles from the material by using presses (shaping on moving conveyers [B28B5/00](#)); Presses specially adapted therefor (presses in general [B30B](#))**

- B28B3/00B . [N: Pressing by means acting upon the material via flexible mould wall parts, e.g. by means of inflatable cores, isostatic presses (isostatic presses in general [B30B5/02](#))]
- B28B3/00C . [N: Pressing by atmospheric pressure, as a result of vacuum generation or by gas or liquid pressure acting directly upon the material, e.g. jets of compressed air (moulds for treating with gases or degassing [B28B7/44](#); compacting concrete by means of vacuum in general [E04G21/06B](#))]
- B28B3/02 . wherein a ram exerts pressure on the material in a moulding space; Ram heads of special form
- B28B3/02A . . [N: Ram heads of special form]
- B28B3/02B . . [N: combined with vibrating or jolting]
- B28B3/02C . . [N: the pressure on the material being transmitted through flexible or resilient wall parts, e.g. flexible cushions on the ramming surface, resilient wall parts pressing as a result of deformation caused by ram pressure]
- B28B3/02D . . [N: Hot pressing, e.g. of ceramic materials]
- B28B3/02E . . [N: using a bottom press ram actuated upwardly towards mould covers]
- B28B3/02F . . [N: Centering the press head, e.g. using guiding pins or chamfered mould edges] [[N1204](#)]
- B28B3/04 . . with one ram per mould ([B28B3/10](#) takes precedence)
- B28B3/06 . . . with two or more ram and mould sets
- B28B3/08 . . with two or more rams per mould
- B28B3/08B . . . [N: The juxtaposed rams working in the same direction] [[N0311](#)]
- B28B3/08C . . . [N: The rams working in different directions] [[N0311](#)]
- B28B3/10 . . each charge of material being compressed against previously formed body
- B28B3/12 . wherein one or more rollers exert pressure on the material
- B28B3/12B . . [N: on material in moulds or on moulding surfaces moving continuously underneath or between the rollers, e.g. on an endless belt]
- B28B3/12C . . [N: on material passing directly between the co-operating rollers]
- B28B3/14 . . with co-operating pocketed rollers
- B28B3/16 . . with co-operating profiled rollers
- B28B3/18 . . Roller-and-ring machines, i.e. with roller disposed within a ring and co-operating with the inner surface of the ring
- B28B3/20 . wherein the material is extruded [N: (extrusion moulding of plastics [B29C47/00](#))]
- B28B3/20A . . [N: Means for heating or cooling the barrel] [[N1204](#)]
- B28B3/20C . . [N: using vibrations]
- B28B3/20D . . [N: Forcing the material through screens or slots] [[N1204](#)]
- B28B3/20E . . [N: Exchangeable wear parts, e.g. liners] [[N1204](#)]
- B28B3/22 . . by screw or worm
- B28B3/22B . . . [N: Screw or worm constructions]
- B28B3/22C . . . [N: Twin screw extruders, e.g. double shaft extruders] [[N1204](#)]
- B28B3/22D . . . [N: Means for heating or cooling the screw] [[N1204](#)]
- B28B3/22E . . . [N: Slipform casting extruder, e.g. self-propelled extruder] [[N1204](#)]
- B28B3/24 . . by reciprocating plunger

- B28B3/26 . . Extrusion dies
- B28B3/26A . . . [N: Containing rotating elements perpendicular to the axis of extrusion] [N1204]
- B28B3/26B . . . [N: using lubricating means]
- B28B3/26C . . . [N: using means for making hollow objects with transverse walls, e.g. hollow objects closed on all sides]
- B28B3/26D . . . [N: using means for co-extruding different materials]
- B28B3/26E . . . [N: using means for inserting reinforcing members] [N9706]
- B28B3/26F . . . [N: Means for heating or cooling the die] [N1204]
- B28B3/26G . . . [N: Exchangeable wear parts, e.g. liners] [N1204]
- B28B3/26H . . . [N: Means for adjusting the flow inside the die, e.g. using choke means] [N1204]
- B28B3/26I . . . [N: Adjustable dies, e.g. for altering the shape of the product] [N1204]
- B28B3/26J . . . [N: For multi-channeled structures, e.g. honeycomb structures] [N1204]

B28B5/00 Producing shaped articles from the material in moulds or on moulding surfaces, carried or formed by, in, or on conveyers irrespective of the manner of shaping (shaping aspects see the relevant groups)

- B28B5/02 . on conveyers of the endless-belt or chain type (in combination with pressing rollers [B28B3/12](#))
- B28B5/02B . . [N: the shaped articles being of definite length] [C9710]
- B28B5/02B2 . . . [N: the moulds or the moulding surfaces being individual independant units and being discontinuously fed (feeding [B28B13/02D](#) and sub-groups)] [C9710]
- B28B5/02B2B [N: Moulds mounted on an endless chain conveyer for making pottery ware] [N9710]
- B28B5/02B4 . . . [N: the moulds or the moulding surfaces being divided by separating walls and being continuously fed (feeding [B28B13/02](#))] [C9710]
- B28B5/02C . . [N: the shaped articles being of indefinite length] [N9710]
- B28B5/02C2 . . . [N: the moulding surfaces being of the indefinite length type, e.g. belts, and being continuously fed (feeding [B28B13/02](#))] [N9710]
- B28B5/02C4 . . . [N: the moulding surfaces being of definite length, e.g. succession of moving pallets, and being continuously fed (feeding [B28B13/02](#))] [N9710]

B28B5/04 . in moulds moved in succession past one or more shaping stations (on turn-tables [B28B5/06](#))

B28B5/06 . in moulds on a turn-table

B28B5/08 . . intermittently rotated

B28B5/10 . in moulds carried on the circumference of a rotating drum

B28B5/12 . . intermittently rotated

B28B7/00 Moulds; Cores; Mandrels(specially adapted for the production of the tubular articles [B28B21/00](#); [N: for casting metals [B22C9/00](#); moulds for plastic materials in general [B29C33/00](#); falsework, forms or shutterings for forming buildings or parts thereof in situ [E04G9/00](#) to [E04G15/00](#)]) [C9509]

B28B7/00A . [N: Auxiliary parts or elements of the mould] [N1204]

- B28B7/00A1 . . [N: Mould identification means, e.g. by radio frequency identification device [RFID]] [N1204]
- B28B7/00A3 . . [N: Venting channels, e.g. to avoid vacuum during demoulding or allowing air to escape during feeding, pressing or moulding] [N1204]
- B28B7/00A5 . . [N: Mould seals] [N1204]
- B28B7/00A7 . . [N: Fastening means for mould parts, e.g. for attaching mould walls on mould tables; Mould clamps (clamping means specially adapted for counteracting a pressure being applied on a slip or on the moulded article in the mould B28B1/26C2)] [N1204]
- B28B7/00A7A . . . [N: for attaching mould walls on mould tables] [N1204]
- B28B7/00A7B . . . [N: using magnets] [N1204]
- B28B7/00A7C . . . [N: using vacuum] [N1204]
- B28B7/00A7D . . . [N: using adhesive] [N1204]
- B28B7/00B . [N: Moulds or moulding surfaces not covered by [B28B7/00D](#) to [B28B7/36](#) and [B28B7/40](#) to [B28B7/46B](#), e.g. moulds assembled from several parts]
- B28B7/00B2 . . [N: Moulding tables or similar mainly horizontal moulding surfaces]
- B28B7/00B3 . . [N: Moulds characterised by the way in which the sidewalls of the mould and the moulded article move with respect to each other during demoulding]
- B28B7/00B3B . . . [N: the sidewalls of mould and moulded article moving only past each other, e.g. box-shaped moulds which are lifted off from the moulding]
- B28B7/00B3C . . . [N: the sidewalls of the mould being moved only parallelly away from the sidewalls of the moulded article]
- B28B7/00B3D . . . [N: the sidewalls of the mould being only tilted away from the sidewalls of the moulded article, e.g. moulds with hingedly mounted sidewalls]
- B28B7/00B6 . . [N: Mould pallets; Mould panels]
- B28B7/00D . [N: Moulds, cores or mandrels with provisions concerning the elimination of superfluous material; Moulds with burr-removing means provided therein or carried thereby]
- B28B7/00E . [N: Moulds, cores or mandrels specially adapted for mechanically working moulding surfaces during moulding or demoulding, e.g. smoothing by means of mould walls driven during moulding or of parts acting during demoulding]
- B28B7/00F . [N: Moulds characterised by special surfaces for producing a desired surface of a moulded article, e.g. profiled or polished moulding surfaces ([B28B7/36](#) takes precedence; producing decorative effects [B44C](#); designs of stone surfaces [B44F](#))] [C9611]
- B28B7/00F1 . . [N: with polished or glossy moulding surfaces] [N9611]
- B28B7/00F2 . . [N: with moulding surfaces simulating natural effects, e.g. wood or stone] [N9611]
- B28B7/00F3 . . [N: with moulding surfaces simulating assembled bricks or blocks with mortar joints ([B28B7/00F2](#) takes precedence)] [N9611]
- B28B7/00F4 . . [N: with surfaces for moulding letters or marks] [N9611]
- B28B7/00F5 . . [N: with surfaces for moulding interlocking means, e.g. grooves and ribs] [N9611]
- B28B7/00F6 . . [N: with surfaces for moulding parallel grooves or ribs ([B28B7/00F3](#), [B28B7/00F5](#) takes precedence)] [N9611]
- B28B7/00F7 . . [N: with surfaces for moulding chamfers] [N9611]
- B28B7/00G . [N: Moulds in which at least one surface of the moulded article serves as mould surface, e.g. moulding articles on or against a previously shaped article, between

- previously shaped articles]
- B28B7/00H . [N: Transformable moulds allowing the change of shape of an initial moulded preform by preform deformation or the change of its size by moulding on the preform] [C9611]
 - B28B7/00I . [N: Moulds for concrete test samples]
 - B28B7/00K . [N: Press moulds; Press-mould and press-ram assemblies]
 - B28B7/02 . Moulds with adjustable parts [N: specially for modifying at will the dimensions or form of the moulded article]
 - B28B7/02A . . [N: the mould surface being made of or being supported by a plurality of small elements, e.g. to create double curvatures] [N1204]
 - B28B7/04 . . one or more of the parts being pivotally mounted
 - B28B7/06 . Moulds with flexible parts
 - B28B7/06A . . [N: Casting in sack or bag like moulds] [N1204]
 - B28B7/08 . Moulds provided with means for tilting or inverting
 - B28B7/08B . . [N: Tiltable moulding tables or similar moulding surfaces (specially for casting and erecting walls or parts thereof during construction work [E04G11/32](#))]
 - B28B7/08C . . [N: for making double wall panels]
 - B28B7/08D . . [N: using rocker or rolling means]
 - B28B7/10 . Moulds with means incorporated therein, or carried thereby, for ejecting [N: or detaching] the moulded article ([N: flexible moulds bent open for ejecting [B28B7/06](#); ejecting by tilting or inverting the mould [B28B7/08](#)]; devices, not forming part of the mould, for ejecting the moulded article [B28B13/06](#)) [C9509]
 - B28B7/12 . . by fluid pressure, [N: e.g. acting through flexible wall parts or linings of the moulds]
 - B28B7/14 . Moulds with means incorporated therein, or carried thereby, for cutting the moulded article into parts ([N: for expanded material [B28B1/50B2](#)]; cutting means independent of the mould [B28B11/14](#))
 - B28B7/16 . Moulds for making shaped articles with cavities or holes open to the surface, [N: e.g. with blind holes]
 - B28B7/16B . . [N: for building blocks or similar block-shaped articles]
 - B28B7/16C . . [N: for plates, panels, or similar sheet- or disc-shaped articles]
 - B28B7/16D . . [N: for oblong articles, e.g. hollow masts]
 - B28B7/16E . . [N: for holders or similar hollow articles, e.g. vaults, sewer pits]
 - B28B7/18 . . the holes passing completely through the article
 - B28B7/18B . . . [N: for building blocks or similar block-shaped objects]
 - B28B7/18C . . . [N: for plates, panels or similar sheet- or disc-shaped objects, also flat oblong moulded articles with lateral openings, e.g. panels with openings for doors or windows, grated girders]
 - B28B7/20 . Moulds for making shaped articles with undercut recesses, e.g. dovetails
 - B28B7/22 . Moulds for making units for prefabricated buildings [N: i.e. units each comprising an important section of at least two limiting planes of a room or space, e.g. cells (for making rooms or entire buildings in situ [E04G11/02](#))]; Moulds for making prefabricated

stair units

- B28B7/22B . . [N: for making stairs or stair units comprising more than one step (in situ [E04G13/06](#))]
- B28B7/24 . Unitary mould structures with a plurality of moulding spaces, [N: e.g. moulds divided into multiple moulding spaces by integratable partitions, mould part structures providing a number of moulding spaces in mutual co-operation (assemblies of individually complete moulds [B28B7/26](#))]
- B28B7/24B . . [N: Detachable assemblies of mould parts providing only in mutual co-operation a number of complete moulding spaces]
- B28B7/24B2 . . . [N: for making plates, panels or similar sheet- or disc-shaped objects]
- B28B7/24B2B [N: using transportable mould batteries]
- B28B7/24B3 . . . [N: for making oblong objects, e.g. girders]
- B28B7/24B4 . . . [N: using angle-shaped mould parts, e.g. L-parts]
- B28B7/26 . Assemblies of separate moulds [N: i.e. of moulds or moulding space units, each forming a complete mould or moulding space unit independently from each other]
- B28B7/26B . . [N: for making plates, panels or similar sheet- or disc-shaped objects]
- B28B7/26C . . [N: for making oblong objects, e.g. girders]
- B28B7/28 . Cores; Mandrels [N: ([B28B1/44](#) takes precedence; of special materials in general [B28B7/34](#); cores for making blind holes in situ [E04G15/04](#); for making recesses [E04G15/06](#))] [C9509]
- B28B7/28A . . [N: Core puller] [N1204]
- B28B7/30 . . adjustable, collapsible, or expanding [N: (for making tubular objects [B28B21/88](#))]
- B28B7/30B . . . [N: specially for making undercut recesses or continuous cavities the inner section of which is superior to the section of either of the mouths]
- B28B7/30C . . . [N: pliable or extensible]
- B28B7/32 . . . inflatable [N: (connection of valves to inflatable elastic bodies [B60C29/00](#))] [C9509]
- B28B7/34 . Moulds, cores, or mandrels of special material, e.g. destructible materials (for slip casting [B28B1/26](#))
- B28B7/34B . . [N: which are at least partially destroyed, e.g. broken, molten, before demoulding; Moulding surfaces or spaces shaped by, or in, the ground, or sand or soil, whether bound or not; Cores consisting at least mainly of sand or soil, whether bound or not]
- B28B7/34C . . [N: from absorbent or liquid- or gas-permeable materials, e.g. plaster moulds in general]
- B28B7/34D . . [N: Manufacture of moulds]
- B28B7/34E . . [N: of plastic material or rubber]
- B28B7/36 . Linings or coatings, [N: e.g. removable, absorbent linings, permanent anti-stick coatings; Linings becoming a non-permanent layer of the moulded article] (lubricating surfaces of moulds, cores or mandrels [B28B7/38](#))
- B28B7/36B . . [N: specially for making moulded articles from concrete with exposed aggregate]
- B28B7/36C . . [N: of plastic material or rubber]
- B28B7/36D . . [N: Replaceable lining plates for press mould]
- B28B7/36E . . [N: Absorbent linings] [N0104]

- B28B7/38 . Treating surfaces of moulds, cores, or mandrels to prevent sticking
- B28B7/38B . . [N: Devices for treating, e.g. sanding]
- B28B7/38C . . [N: Treating agents (for plastic moulding materials in general [B29C33/60](#); lubricants in general [C10M](#))] [C9509]
- B28B7/38D . . [N: Cleaning]
- B28B7/38E . . [N: with liquid material, e.g. lubricating]

- B28B7/40 . characterised by means for modifying the properties of the moulding material [N9509]
- B28B7/42 . . for heating or cooling, e.g. steam jackets, [N: by means of treating agents acting directly on the moulding material] [N9509]
- B28B7/44 . . for treating with gases or degassing, e.g. for de-aerating [N: (treating with hot gases or vapour [B28B7/42](#))] [N9509]
- B28B7/46 . . for humidifying or dehumidifying [N9509]
- B28B7/46B . . . [N: Applying setting liquid to dry mixtures] [N9509]

- B28B11/00** **Apparatus or processes for treating or working the shaped [N: or preshaped] articles (specially adapted for tubular articles [B28B21/92](#); decoration or surface treatment in general [B05](#), [B44](#); compacting concrete in situ in connection with building [E04G21/06](#); drying [F26](#))**

- B28B11/00B . [N: Applying decorations on shaped articles, e.g. by painting]
- B28B11/00D . [N: Apparatus for washing concrete for decorative purposes or similar surface treatments for exposing the texture]

- B28B11/00E . [N: the shaping of preshaped articles, e.g. by bending ([B28B11/08](#) takes precedence)]
- B28B11/00E1 . . [N: Using heat to allow reshaping, e.g. to soften ceramic articles] [N1204]
- B28B11/00E2 . . [N: Making hollow articles or partly closed articles]
- B28B11/00E2A . . . [N: Using a mask for plugging] [N1204]
- B28B11/00E3 . . [N: Blow moulding, e.g. with or without the use of a membrane] [N1204]

- B28B11/02 . for attaching appendages, e.g. handles, spouts

- B28B11/04 . for coating [N: or applying engobing layers] (glazing, engobing [C04B](#)) [C9509]
- B28B11/04A . . [N: for moulded articles undergoing a thermal treatment at high temperatures, such as burning, after coating]
- B28B11/04B . . [N: with insulating material]
- B28B11/04B1 . . . [N: filling cavities or chambers of hollow blocks] [N1204]
- B28B11/04C . . [N: with glaze or engobe or enamel or varnish]
- B28B11/04E . . [N: by dipping] [N1204]
- B28B11/04F . . [N: by rolling] [N1204]
- B28B11/04G . . [N: by pouring, e.g. curtain coating] [N1204]
- B28B11/04H . . [N: by spraying or projecting] [N1204]
- B28B11/04I . . [N: Recycling of the coating material] [N1204]
- B28B11/06 . . with powdered or granular material, [N: e.g. sanding of shaped articles]

- B28B11/08 . for reshaping the surface, e.g. smoothing, roughening, corrugating, making

- screw-threads
- B28B11/08A . . [N: Hand tools therefore] [N1204]
- B28B11/08B . . [N: for roughening, profiling, corrugating]
- B28B11/08B2 . . . [N: for corrugating, profiling or the like of plates such as asbestos cement sheets]
- B28B11/08B4 . . . [N: for pottery articles]
- B28B11/08C . . [N: for smoothing]
- B28B11/08D . . [N: for making screw-threads or the like in the surface of the shaped article]
- B28B11/08E . . [N: for profiling, e.g. making grooves]
- B28B11/08F . . [N: Non-mechanical reshaping of the surface, e.g. by burning, acids, radiation energy, air flow, etc.] [N1204]
- B28B11/08G . . [N: Using vibrating mechanisms, e.g. vibrating plates for ageing stones] [N1204]
- B28B11/08H . . [N: Using impacting tools] [N1204]
- B28B11/10 . . by using presses [C9509]

- B28B11/12 . for removing parts of the articles by cutting
- B28B11/12B . . [N: Cutting-off protruding ridges, also profiled cutting]

- B28B11/14 . for dividing shaped articles by cutting
- B28B11/14A . . [N: for dividing block-shaped bodies of expanded materials, e.g. cellular concrete]
- B28B11/16 . . for extrusion [N: or for materials supplied in long webs] [C9509]
- B28B11/16A . . . [N: in vertically operating extrusion presses]
- B28B11/16B . . . [N: in which the cutting device is moved longitudinally with the moving strand]
- B28B11/16B2 [N: mounted on a carrier]
- B28B11/16D . . . [N: with devices for determining the correct cutting moment, e.g. measuring rollers or the like]
- B28B11/16F . . . [N: in which the material is cut-out from a strand or web by means of a frame-shaped knife]

- B28B11/18 . for removing burr [(N: combined with the mould [B28B7/00D](#))]

- B28B11/22 . for cleaning

- B28B11/24 . for curing, setting or hardening (processes for influencing or modifying the setting or hardening ability of mortars, concrete or artificial stone compositions, in general [C04B40/00](#)) [N9509]
- B28B11/24A . . [N: using microwave heating means] [N1204]
- B28B11/24B . . [N: by passing an electric current through wires, rods or reinforcing members incorporated in the article] [N9509]
- B28B11/24C . . [N: Setting, e.g. drying, dehydrating or firing ceramic articles ([B28B11/24B](#) takes precedence)] [N9509]
- B28B11/24D . . [N: Curing concrete articles ([B28B11/24B](#) takes precedence)] [N9509]
- B28B11/24D1 . . . [N: Underwater curing] [N1204]
- B28B11/24E . . [N: Controlling the humidity during curing, setting or hardening] [N1204]
- B28B11/24F . . [N: Supports for drying] [N1204]

- B28B13/00 Feeding the unshaped material to moulds or apparatus for producing shaped**

articles; Discharging shaped articles from such moulds or apparatus (feeding or discharging devices incorporated in, or operatively associated with, a particular type of shaping apparatus, or specially designed to supply materials to a particular type of shaping apparatus, see the relevant groups for the apparatus)

- B28B13/02 . Feeding the unshaped material to moulds or apparatus for producing shaped articles
- B28B13/02B . . [N: supplied to the moulding device in form of a coherent mass of material, e.g. a lump or an already partially preshaped tablet, pastil or the like]
- B28B13/02C . . [N: by fluid pressure acting directly on the material, e.g. using vacuum, air pressure]
- B28B13/02D . . [N: Feeding the moulding material in measured quantities from a container or silo]
- B28B13/02D2 . . . [N: Feeding several successive layers, optionally of different materials]
- B28B13/02D3 . . . [N: Feeding specific quantities of material at specific locations in the mould] [N1204]
- B28B13/02D4 . . . [N: by using a feed box transferring the moulding material from a hopper to the moulding cavities]
- B28B13/02D4A [N: the feed box being provided with agitating means, e.g. stirring vanes to avoid premature setting of the moulding material (agitation in general B01F)] [N1204]
- B28B13/02D4C [N: Rotatable feed frames, e.g. horizontally rotated over 90 degrees] [N1204]
- B28B13/02D4D [N: the feed box being vibrated, e.g. to promote discharging of the material] [N1204]
- B28B13/02D4E [N: Disposal of residual material, e.g. by means of the return stroke of the feed drawer] [N1204]
- B28B13/02D5 . . . [N: by using a movable hopper transferring the moulding material to the moulding cavities] [N1204]
- B28B13/02D7 . . . [N: by using a removable belt or conveyor transferring the moulding material to the moulding cavities] [N1204]
- B28B13/02D8 . . . [N: Feeding a slurry or a ceramic slip] [N1204]
- B28B13/02E . . [N: Deflecting the flow of the unshaped material] [N1204]
- B28B13/02F . . [N: the material being prearranged on a sheet, e.g. using a decal] [N1204]
- B28B13/02G . . [N: through a sieve or grid, e.g. to ensure evenly filling of cavities] [N1204]
- B28B13/02H . . [N: Treating the surface of the fed layer, e.g. removing material or equalization of the surface] [N1204]

- B28B13/04 . Discharging the shaped articles ([N: discharging tubular articles after shaping [B28B21/90;](#)] [conveying systems for ceramic mouldings B65G49/08](#)) [C9509]
- B28B13/06 . . Removing the shaped articles from moulds (by means incorporated in, or carried by, the moulds [B28B7/10](#))
- B28B13/06A . . . [N: by elastically deforming the mould, e.g. bending flexible moulds] [N1204]
- B28B13/06B . . . [N: by applying electric current or other means of discharging, e.g. pneumatic or hydraulic discharging means]
- B28B13/06D . . . [N: by applying blows or vibrations followed by, or during, the removal of a mould part]

- B28B15/00** **General arrangement or lay-out of plant** [N: Industrial outlines, plant installations]
- B28B15/00A . [N: Mobile plants, e.g. on vehicles or on boats]

- B28B15/00B . [N: Machines using pallets co-operating with a bottomless mould; Feeding or discharging means for pallets (Feeding pallets for making a continuous moulding surface [B28B5/02B4](#), [B28B5/02C4](#))] [C9710]
- B28B15/00C . [N: Plant with two or more identical shaping or moulding devices] [N9611]
- B28B17/00** **Details of, or accessories for, apparatus for shaping the material; Auxiliary measures taken in connection with such shaping** (moulds [B28B7/00](#); after-treatment [B28B11/00](#); feeding or discharging [B28B13/00](#); arrangements for embedding elements in the material [B28B23/00](#); details, accessories, or auxiliary measures special to any one type of shaping, machine or method of shaping, see the relevant groups for such machines or methods)
- B28B17/00B . [N: Shaping of preshaped articles (shaping the surface of articles [B28B11/08](#))]
- B28B17/00C . [N: Separating articles from each other]
- B28B17/00D . [N: Accessories for obtaining rubblestones]
- B28B17/00E . [N: Cutting means, e.g. water jets]
- B28B17/00F . [N: Tensioning devices for cutting means]
- B28B17/00G . [N: Cleaning devices for cutting means]
- B28B17/00H . [N: Control arrangements]
- B28B17/00H1 . . [N: Product control or inspection] [N1204]
- B28B17/00H2 . . [N: Process control] [N1204]
- B28B17/00K . [N: Changing the forming elements, e.g. exchanging moulds, dies] [N9611]
- B28B17/02 . Conditioning the material prior to shaping [N: (for mixtures containing clay or cement [B28C](#))]
- B28B17/02B . . [N: Conditioning gypsum] [N9611]
- B28B17/02C . . [N: Conditioning ceramic materials] [N9611]
- B28B17/04 . Exhausting or laying dust
- B28B19/00** **Machines or methods for applying the material to surfaces to form a permanent layer thereon** (making shaped articles on mandrels [B28B1/30](#); applying liquids or other fluent materials to surfaces in general [B05C](#); glazing or engobing [C04B](#); applying the material to walls or other fixed structures, see the relevant classes of section E)
- B28B19/00A . [N: for producing articles with exposed aggregate]
- B28B19/00B . [N: on multilayered articles]
- B28B19/00C . [N: Lining the inner wall of hollow objects, e.g. pipes]
- B28B19/00E . [N: to insulating material]

- B28B19/00F . [N: lining the outer wall of hollow objects, e.g. pipes]
- B28B19/00G . [N: to plastics]
- B28B19/00H . [N: to tiles, bricks or the like]
- B28B19/00H2 . . [N: Means for arranging or fixing the tiles, bricks or the like in the mould]
- B28B19/00H2A . . . [N: the tiles, bricks or the like being sunk in resilient mould material] [N1204]
- B28B19/00H2B . . . [N: the tiles, bricks or the like being sunk in heated mould material, e.g. thermoplastic material to temporarily fix them] [N1204]
- B28B19/00H2C . . . [N: using pressurized elements for fixing the tiles, bricks or the like] [N1204]
- B28B19/00K . [N: to webs, sheets or the like, e.g. of paper, cardboard]

Guide heading: **Methods, apparatus, or machines, specially adapted for the production of tubular or reinforced articles**

B28B21/00 **Methods or machines specially adapted for the production of tubular articles**

- B28B21/02 . by casting into moulds
- B28B21/04 . . by simple casting, the material being neither positively compacted nor forcibly fed
- B28B21/06 . . into moulds having sliding parts ([B28B21/26](#) takes precedence; forms, shutterings, or falsework for making rooms as a whole, whole stories, or whole buildings in situ [E04G11/02](#))
- B28B21/08 . . by slip-casting; Moulds therefor
- B28B21/10 . . using compacting means
- B28B21/12 . . . tamping or ramming the material or the mould elements
- B28B21/14 . . . vibrating, e.g. the surface of the material
- B28B21/16 one or more mould elements
- B28B21/18 . . . using expansible or retractable mould or core elements
- B28B21/20 using inflatable cores, e.g. having a frame inside the inflatable part of the core ([connection of valves to inflatable elastic bodies B60C29/00](#)) [C9509]
- B28B21/20B [N: having a rigid frame inside the inflatable part of the core]
- B28B21/22 . . . using rotatable mould or core parts
- B28B21/24 using compacting heads, rollers, or the like
- B28B21/24A [N: the working diameter of the compacting mechanism being adjustable, e.g. the compacting rollers on the head being displaceable] [N1204]
- B28B21/24B [N: using a horizontal compacting roller in a horizontally rotatable mould] [N9509]
- B28B21/24C [N: the rollers of the compaction head being driven, e.g. to overcome or modify the tangential force] [N1204]
- B28B21/26 with a packer head serving as a sliding mould or provided with guiding means for feeding the material
- B28B21/28 combined with vibration means
- B28B21/30 Centrifugal moulding
- B28B21/30B [N: Moulding machines with vertical rotation axis]

- B28B21/32 Feeding the material into the moulds
- B28B21/34 combined with vibrating or other additional compacting means
- B28B21/36 applying fluid pressure or vacuum to the material ([combined with slip-casting B28B21/08](#))
- B28B21/38 introducing the material wholly or partly under pressure; [N: [Injection-moulding machines](#)]
- B28B21/40 by evacuating one or more of the mould parts; [N: [Vacuum machines](#)]
- B28B21/42 by shaping on or against mandrels or like moulding surfaces
- B28B21/44 by projecting, e.g. spraying
- B28B21/46 by dipping
- B28B21/48 by wrapping, e.g. winding
- B28B21/50 Details of compression or compacting means
- B28B21/52 by extruding
- B28B21/54 Mouthpieces for shaping sockets, bends, or like peculiarly-shaped tubular articles
- B28B21/56 incorporating reinforcements [N: [or inserts](#)]
- B28B21/56B [N: [Gaskets](#)]
- B28B21/56C [N: [Climbing elements](#)]
- B28B21/58 Steel tubes
- B28B21/60 prestressed reinforcements
- B28B21/62 circumferential [N: [laterally tensioned](#)]
- B28B21/64 Winding arrangements
- B28B21/66 Reinforcing mats
- B28B21/68 and applying centrifugal forces
- B28B21/70 by building-up from preformed elements
- B28B21/72 Producing multilayer tubes
- B28B21/74 Producing pipe bends, sockets, sleeves; Moulds therefor ([combined with extrusion presses B28B21/54](#))
- B28B21/76 Moulds [N: ([for slip-casting B28B21/08](#))]
- B28B21/76A [N: Top or bottom rings] [N1204]
- B28B21/78 with heating or cooling means, e.g. steam jackets
- B28B21/80 adapted to centrifugal or rotational moulding
- B28B21/82 built-up from several parts; Multiple moulds; Moulds with adjustable parts
- B28B21/84 Moulds with one or more pivotable parts
- B28B21/86 Cores ([in general B28B7/00](#))
- B28B21/88 adjustable, collapsible or expandable ([using inflatable cores B28B21/20](#) [N: [for compacting B28B21/18](#)])
- B28B21/90 Methods or apparatus for [N: [demoulding or](#)] discharging after shaping [C9509]
- B28B21/90B [N: [Removing from a mandrel](#)]
- B28B21/92 Methods or apparatus for treating or reshaping

- B28B21/92B . . [N: for wrapping]
- B28B21/94 . . for impregnating or coating by applying liquids or semi-liquids
- B28B21/96 . . for smoothing, roughening, corrugating or for removing burr
- B28B21/96B . . . [N: for grooving or corrugating]
- B28B21/98 . . for reshaping, e.g. by means of reshape moulds

- B28B23/00** **Arrangements specially adapted for the production of shaped articles with elements wholly or partly embedded in the moulding material; [N: Production of reinforced objects] (B28B21/00 takes precedence; in units for prefabricated buildings B28B7/22)**

- B28B23/00A . [N: the reinforcement consisting of aligned, non-metal reinforcing elements]
- B28B23/00B . [N: Producing brick netting]
- B28B23/00C . [N: Producing metal-clad stones, such as oven stones]
- B28B23/00D . [N: with installation or service material, e.g. tubes for electricity or water] [N1204]
- B28B23/00E . [N: with product identification means, e.g. labels on test products or integrated circuit tags inside products RFID] [N1204]
- B28B23/00F . [N: with elements being able to conduct light, e.g. light conducting fibers] [N1204]
- B28B23/00R . [N: with gaskets or sealing elements, e.g. for tunnelings or man holes (B28B21/56B takes precedence)] [N9706]
- B28B23/00S . [N: with anchoring or fastening elements for the shaped articles] [C9509]
- B28B23/00T . [N: Means for inserting the elements into the mould or supporting them in the mould (B28B23/02B takes precedence)]
- B28B23/00U . [N: forcing the elements into the cast material, e.g. hooks into cast concrete] [N1204]
- B28B23/00V . [N: Embedding lost cores]
- B28B23/00W . [N: for decorative purposes]
- B28B23/00Z . [N: Embedding aggregates to obtain particular properties] [N9509]
- B28B23/00Z1 . . [N: Lightweight aggregates for making lightweight articles] [N9509]
- B28B23/00Z2 . . [N: Heavy aggregates or scrap material for making heavy articles] [N9509]
- B28B23/02 . wherein the elements are reinforcing members [N: (B28B23/00A takes precedence)] [N9509]
- B28B23/02B . . [N: Means for inserting reinforcing members into the mould or for supporting them in the mould (inserting during extrusion B28B3/26E)] [N9509] [C9706]
- B28B23/02B1 . . . [N: Supporting means] [N9706]
- B28B23/02B1A [N: Mould partitioning elements acting as supporting means in moulds, e.g. for elongated articles] [N9706]
- B28B23/02C . . [N: for double - wall articles] [N9509]

- B28B23/04 . . the elements being stressed [N9509]
- B28B23/04B . . . [N: Wire anchoring or tensioning means for the reinforcements] [N9509]
- B28B23/04C . . . [N: Post treatment to obtain pre-stressed articles] [N0211]
- B28B23/06 . . . for the production of elongated articles [N9509]
- B28B23/10 . . . the shaping being effected by centrifugal or rotational moulding [N9509]
- B28B23/12 . . . to form prestressed circumferential reinforcements [N9509]
- B28B23/14 by wrapping, e.g. winding, apparatus [N9509]
- B28B23/16 Prestressed reinforcing nets [N9509]
- B28B23/18 . . for the production of elongated articles([B28B23/06](#)takes precedence)[N9509]
- B28B23/20 . . the shaping being effected by centrifugal or rotational moulding ([B28B23/10](#) takes precedence) [N9509]
- B28B23/22 . . assembled from preformed parts [N9509]