SECTION C — CHEMISTRY; METALLURGY

C03 GLASS; MINERAL OR SLAG WOOL

C03B MANUFACTURE OR SHAPING OF GLASS, OR OF MINERAL OR SLAG WOOL; SUPPLEMENTARY PROCESSES IN THE MANUFACTURE OR SHAPING OF GLASS, OR OF MINERAL OR SLAG WOOL (surface treatment C03C)

Subclass index

MANUFACTURE OF GLASS
- Processes before melting....1/00, 3/00
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SHAPING
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- Thermic treatment....25/00, 29/00, 32/00
- Tempering....27/00
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- Re-forming....23/00, 31/00
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Melting the raw material

1/00 Preparing the batches [1, 2006.01]

1/02 • Compacting the glass batches, e.g. pelletising **[5, 2006.01]**

3/00 Charging the melting furnaces [1, 2006.01]

3/02 • combined with preheating, premelting or pretreating the glass-making ingredients, pellets or cullet **[5, 2006.01]**

5/00 Melting in furnaces; Furnaces so far as specially adapted for glass manufacture [1, 2006.01]

5/02 • in electric furnaces **[1, 2006.01]**

5/027 • • by passing an electric current between electrodes immersed in the glass bath, i.e. by direct resistance heating **[3, 2006.01]**

5/03 • • • Tank furnaces **[5, 2006.01]**

5/033 • • by using resistance heaters above or in the glass bath, i.e. by indirect resistance heating **[3, 2006.01]**

Note(s)

Group C03B 5/02 takes precedence over groups C03B 5/04-C03B 5/14.

5/04 • in tank furnaces **[1, 2006.01]**

5/05 • • Discontinuously-working tank furnaces, e.g. day tanks **[5, 2006.01]**

5/06 • in pot furnaces **[1, 2006.01]**

5/08 • • Glass-melting pots **[1, 2006.01]**

5/10 • in combined tank furnaces and pots **[1, 2006.01]**

5/12 • in shaft furnaces **[1, 2006.01]**

5/14 • in revolving cylindrical furnaces **[1, 2006.01]**

5/16 • Special features of the melting process; Auxiliary means specially adapted for glass-melting furnaces **[1, 2006.01]**

5/167 • • Means for preventing damage to equipment, e.g. by molten glass, hot gases, batches (C03B 5/20, C03B 5/42 take precedence) **[5, 2006.01]**

5/173 • • Apparatus for changing the composition of the molten glass in glass furnaces, e.g. for colouring the molten glass (chemical aspects C03C) **[5, 2006.01]**

5/18 • • Stirring devices; Homogenisation **[1, 2006.01]**

5/182 • • • by moving the molten glass along fixed elements, e.g. deflectors, weirs, baffle plates **[5, 2006.01]**

5/183 • • • using thermal means, e.g. for creating convection currents **[5, 2006.01]**

5/185 • • • • Electric means **[5, 2006.01]**

5/187 • • • with moving elements **[3, 2006.01]**

5/193 • • • using gas, e.g. bubblers **[3, 2006.01]**

5/20 • • Bridges, shoes, throats, or other devices for withholding dirt, foam, or batch **[1, 2006.01]**

5/225 • • Refining (C03B 5/18 takes precedence) **[3, 2006.01]**

5/23 • • Cooling the molten glass (C03B 5/18, C03B 5/225 take precedence) **[3, 2006.01]**
5/235 • • Heating the glass (C03B 5/02, C03B 5/18, C03B 5/225 take precedence) **[3, 2006.01]**
5/237 • • • Regenerators or recuperators specially adapted for glass-melting furnaces **[5, 2006.01]**
5/24 • • Automatically regulating the melting process **[1, 2006.01]**
5/26 • • Outlets; Overflows **[1, 2006.01]**
5/28 • • Siphons **[1, 2006.01]**
5/42 • • Details of construction of furnace walls, e.g. to prevent corrosion; Use of materials for furnace walls **[3, 2006.01]**
5/425 • • • Preventing corrosion or erosion (C03B 5/44 takes precedence) **[5, 2006.01]**
5/43 • • • Use of materials for furnace walls, e.g. fire-bricks **[5, 2006.01]**
5/435 • • • Heating arrangements for furnace walls **[5, 2006.01]**
5/44 • • • Cooling arrangements for furnace walls **[3, 2006.01]**

7/00 Distributors for the molten glass; Means for taking-off charges of molten glass; Producing the gob [1, 2006.01]
7/01 • Means for taking-off charges of molten glass **[5, 2006.01]**
7/02 • Forehearths, i.e. feeder channels **[3, 2006.01]**
7/04 • • Revolving forehearths **[3, 2006.01]**
7/06 • • Means for thermal conditioning or controlling the temperature of the glass **[3, 2006.01]**
7/07 • • • Electric means **[5, 2006.01]**
7/08 • Feeder spouts, e.g. gob feeders **[3, 2006.01]**
7/082 • • Pneumatic feeders **[5, 2006.01]**
7/084 • • Tube mechanisms **[5, 2006.01]**
7/086 • • Plunger mechanisms **[5, 2006.01]**
7/088 • • Outlets, e.g. orifice rings **[5, 2006.01]**
7/09 • • Spout blocks **[5, 2006.01]**
7/092 • • Stirring devices; Homogenisation (C03B 5/18 takes precedence) **[5, 2006.01]**
7/094 • • Means for heating, cooling or insulation **[5, 2006.01]**
7/096 • • • for heating **[5, 2006.01]**
7/098 • • • • electric **[5, 2006.01]**
7/10 • Cutting-off the glass flow with the aid of knives or scissors; Construction of the blades used **[3, 2006.01]**
7/11 • • Construction of the blades **[5, 2006.01]**
7/12 • • Cutting-off a free-hanging glass stream **[3, 2006.01]**
7/14 • Transferring molten glass or gobs to glass blowing or pressing machines (C03B 7/18-C03B 7/22 take precedence) **[3, 2006.01]**
7/16 • • using deflector chutes **[3, 2006.01]**
7/18 • Suction feeders **[3, 2006.01]**
7/20 • Scoop feeders **[3, 2006.01]**
7/22 • Gathering-devices in the form of rods or pipes **[3, 2006.01]**

8/00 Production of glass by other processes than melting processes (C03B 37/014 takes precedence; preparation of finely divided silica, in general C01B 33/18) **[4, 2006.01]**
8/02 • by liquid phase reaction processes **[4, 2006.01]**
8/04 • by gas phase reaction processes **[4, 2006.01]**

Shaping of glass

9/00 Blowing glass; Production of hollow glass articles [1, 2006.01]
9/02 • with the mouth; Auxiliary means therefor **[1, 2006.01]**
9/03 • • Blow pipes **[3, 2006.01]**
9/04 • • Making hollow glass articles with feet or projections **[1, 2006.01]**
9/06 • • Making hollow glass articles with double walls, e.g. vacuum flasks **[1, 2006.01]**
9/08 • Finish-blowing with compressed air of blanks blown with the mouth **[1, 2006.01]**
9/10 • Blowing glass cylinders for sheet manufacture **[1, 2006.01]**
9/12 • starting from a ribbon of glass; Ribbon machines **[1, 2006.01]**
9/13 • in gob feeder machines (C03B 9/28, C03B 9/29 take precedence) **[3, 2006.01]**
9/14 • • in "blow" machines or in "blow-and-blow" machines (C03B 9/193, C03B 9/20 take precedence) **[1, 3, 2006.01]**
9/16 • • • in machines with turn-over moulds **[1, 3, 2006.01]**
9/18 • • • • Rotary-table machines **[1, 3, 2006.01]**
9/19 • • • • • having only one rotary table **[3, 2006.01]**
9/193 • • in "press-and-blow" machines **[3, 2006.01]**
9/195 • • • Rotary-table machines **[3, 2006.01]**
9/197 • • • Construction of the blank mould **[3, 2006.01]**
9/20 • in "vacuum blowing" or in "vacuum-and-blow" machines **[1, 2006.01]**
9/22 • • Rotary table machines **[1, 2006.01]**
9/24 • • Construction of the blank mould **[1, 2006.01]**
9/28 • in machines of the endless-chain type (C03B 9/12 takes precedence) **[1, 3, 2006.01]**
9/29 • Paste mould machines (C03B 9/28 takes precedence) **[3, 2006.01]**
9/295 • • Rotary table machines **[5, 2006.01]**
9/30 • Details of blowing glass (for blowing with the mouth C03B 9/02); Use of materials for the moulds **[1, 2006.01]**
9/31 • • Blowing laminated glass articles or glass with enclosures, e.g. wires, bubbles **[5, 2006.01]**
9/32 • • Giving special shapes to parts of hollow glass articles **[1, 2006.01]**
9/325 • • • Forming screw threads or lips at the mouth of hollow glass articles; Neck moulds **[3, 2006.01]**
9/33 • • • Making hollow glass articles with feet or projections; Moulds therefor **[3, 2006.01]**
9/335 • • • Forming bottoms to blown hollow glass articles; Bottom moulds **[3, 2006.01]**
9/34 • • Glass-blowing moulds not otherwise provided for **[1, 2006.01]**
9/347 • • • Construction of the blank or blow mould **[3, 2006.01]**
9/353 • • • Mould holders **[3, 2006.01]**
9/36 • • Blow heads; Supplying, ejecting, or controlling the air **[1, 2006.01]**
9/38 • • Means for cooling, heating, or insulating glass-blowing machines **[1, 2006.01]**
9/40 • • Gearing or controlling mechanisms specially adapted for glass-blowing machines **[1, 2006.01]**
9/41 • • • Electric or electronic systems **[5, 2006.01]**
9/42 • • Means for fusing, burning-off, or edge-melting combined with glass-blowing machines (uniting glass pieces by fusing C03B 23/20) **[1, 2006.01]**

9/44 • • Means for discharging combined with glass-blowing machines, e.g. take-outs **[1, 2006.01]**
9/447 • • • Means for the removal of glass articles from the blow-mould, e.g. take-outs **[5, 2006.01]**
9/453 • • • Means for pushing newly formed glass articles onto a conveyor, e.g. sweep-out mechanisms; Dead-plate mechanisms **[5, 2006.01]**
9/46 • • Means for cutting the hot glass in glass-blowing machines (burning-off C03B 9/42) **[1, 2006.01]**
9/48 • • Use of materials for the moulds **[3, 2006.01]**

11/00 Pressing glass [1, 2006.01]
11/02 • in machines with rotary tables **[1, 2006.01]**
11/04 • in machines with moulds fed by suction **[1, 2006.01]**
11/05 • in machines with reciprocating moulds **[3, 2006.01]**
11/06 • Construction of plunger or mould **[1, 2006.01]**
11/07 • • Suction moulds **[3, 2006.01]**
11/08 • • for making solid articles, e.g. lenses **[1, 2006.01]**
11/10 • • for making hollow articles **[1, 2006.01]**
11/12 • Cooling, heating, or insulating the plunger, the mould, or the glass-pressing machine (C03B 9/38 takes precedence) **[1, 3, 2006.01]**
11/14 • with metal inserts **[1, 2006.01]**
11/16 • Gearing or controlling mechanisms specially adapted for glass presses **[1, 2006.01]**

13/00 Rolling glass [1, 2006.01]
13/01 • Rolling profiled glass articles **[5, 2006.01]**
13/02 • Rolling non-patterned sheets discontinuously **[1, 2006.01]**
13/04 • Rolling non-patterned sheets continuously **[1, 2006.01]**
13/06 • Rolling corrugated sheets **[1, 2006.01]**
13/08 • Rolling patterned sheets **[1, 2006.01]**
13/10 • Rolling multi-layer sheets **[1, 2006.01]**
13/12 • Rolling glass with enclosures, e.g. wire or asbestos **[1, 2006.01]**
13/14 • Rolling other articles **[1, 2006.01]**
13/16 • Construction of the glass rollers **[1, 2006.01]**
13/18 • Auxiliary means for rolling glass, e.g. sheet supports, gripping devices, hand-ladles, means for moving glass pots **[1, 2006.01]**

15/00 Drawing glass upwardly from the melt [1, 2006.01]
15/02 • Drawing glass sheets **[1, 2006.01]**
15/04 • • from the free surface of the melt **[1, 2006.01]**
15/06 • • from a debiteuse **[1, 2006.01]**
15/08 • • by means of bars below the surface of the melt **[1, 2006.01]**
15/10 • • multi-layer glass sheets or glass sheets coated with coloured layers **[1, 2006.01]**
15/12 • • Construction of the annealing tower **[1, 2006.01]**
15/14 • Drawing tubes, cylinders, or rods from the melt **[1, 2006.01]**
15/16 • • Drawing tubes, cylinders, or rods, coated with coloured layers **[1, 2006.01]**
15/18 • Means for laying-down and conveying combined with the drawing of glass sheets, tubes, or rods **[1, 2006.01]**

17/00 Forming glass by flowing out, pushing-out, or drawing downwardly or laterally from forming slits or by overflowing over lips [1, 2006.01]
17/02 • Forming glass coated with coloured layers **[1, 2006.01]**
17/04 • Forming tubes or rods by drawing from stationary or rotating tools or from forming nozzles **[1, 2006.01]**
17/06 • Forming glass sheets **[3, 2006.01]**

18/00 Shaping glass in contact with the surface of a liquid [1, 2006.01]
18/02 • Forming sheets **[1, 2006.01]**
18/04 • • Changing or regulating the dimensions of the molten glass ribbon **[3, 2006.01]**
18/06 • • • using mechanical means, e.g. restrictor bars, edge rollers **[3, 2006.01]**
18/08 • • • using gas **[3, 2006.01]**
18/10 • • • using electric means **[3, 2006.01]**
18/12 • • Making multilayer, coloured or armoured glass (chemical aspects C03C) **[3, 2006.01]**
18/14 • • Changing the surface of the glass ribbon, e.g. roughening (by chemical methods C03C) **[3, 2006.01]**
18/16 • • Construction of the float tank; Use of material for the float tank; Coating or protection of the tank wall **[3, 2006.01]**
18/18 • • Controlling or regulating the temperature of the float bath; Composition or purification of the float bath **[3, 2006.01]**
18/20 • • Composition of the atmosphere above the float bath; Treating or purifying the atmosphere above the float bath **[3, 2006.01]**
18/22 • • • Controlling or regulating the temperature of the atmosphere above the float tank **[3, 2006.01]**

19/00 Other methods of shaping glass (manufacture or treatment of flakes, fibres, or filaments from softened glass, minerals, or slags C03B 37/00) **[1, 2006.01]**
19/01 • by progressive fusion of powdered glass onto a shaping substrate, i.e. accretion **[5, 2006.01]**
19/02 • by casting **[1, 2006.01]**
19/04 • by centrifuging **[1, 2006.01]**
19/06 • by sintering (production of quartz or fused silica articles C03B 20/00) **[1, 2, 2006.01]**
19/08 • by foaming **[1, 2006.01]**
19/09 • by fusing powdered glass in a shaping mould **[3, 2006.01]**
19/10 • Forming beads **[1, 2006.01]**
19/12 • by liquid-phase reaction processes **[5, 2006.01]**
19/14 • by gas-phase reaction processes **[5, 2006.01]**

20/00 Processes specially adapted for the production of quartz or fused silica articles [3, 2006.01]

21/00 Severing glass sheets, tubes, or rods while still plastic [1, 2006.01]
21/02 • by cutting (C03B 9/46 takes precedence) **[1, 2006.01]**
21/04 • by punching out **[1, 2006.01]**
21/06 • by flashing-off, burning-off, or fusing (C03B 9/42 takes precedence) **[1, 3, 2006.01]**

23/00 Re-forming shaped glass (re-forming fibres or filaments C03B 37/14) **[1, 2006.01]**
23/02 • Re-forming glass sheets **[1, 2006.01]**
23/023 • • by bending **[3, 2006.01]**
23/025 • • • by gravity **[3, 2006.01]**
23/027 • • • • with moulds having at least two upward pivotable mould sections **[3, 2006.01]**
23/03 • • • by press-bending between shaping moulds **[3, 2006.01]**

23/031 • • • • the glass sheets being in a vertical position (C03B 23/033 takes precedence) **[5, 2006.01]**
23/033 • • • • in a continuous way, e.g. roll forming **[3, 2006.01]**
23/035 • • • using a gas cushion or by changing gas pressure, e.g. by applying vacuum **[3, 2006.01]**
23/037 • • by drawing **[3, 2006.01]**
23/04 • Re-forming tubes or rods **[1, 2006.01]**
23/043 • • Heating devices specially adapted for re-forming tubes or rods in general, e.g. burners **[5, 2006.01]**
23/045 • • Tools or apparatus specially adapted for re-forming tubes or rods in general, e.g. glass lathes, chucks (C03B 23/043 takes precedence) **[5, 2006.01]**
23/047 • • by drawing (C03B 37/025 takes precedence) **[5, 2006.01]**
23/049 • • by pressing (C03B 21/04, C03B 23/26 take precedence) **[5, 2006.01]**
23/051 • • by gravity, e.g. sagging **[5, 2006.01]**
23/053 • • by centrifuging (C03B 37/04 takes precedence) **[5, 2006.01]**
23/055 • • by rolling **[5, 2006.01]**
23/057 • • by fusing, e.g. for flame sealing (C03B 9/42, C03B 21/06, C03B 33/08 take precedence) **[5, 2006.01]**
23/06 • • by bending **[1, 2006.01]**
23/07 • • by blowing, e.g. for making electric bulbs **[3, 2006.01]**
23/08 • • to exact dimensions, e.g. calibrating **[1, 2006.01]**
23/09 • • Reshaping the ends, e.g. as grooves, threads or mouths **[3, 2006.01]**
23/11 • • Reshaping by drawing without blowing, in combination with separating, e.g. for making ampoules **[3, 2006.01]**
23/13 • • Reshaping combined with uniting or heat sealing, e.g. making vacuum bottles **[3, 2006.01]**
23/18 • Re-forming and sealing ampoules **[1, 2006.01]**
23/20 • Uniting glass pieces by fusing without substantial reshaping **[1, 2006.01]**
23/203 • • Uniting glass sheets (C03B 23/24 takes precedence) **[3, 2006.01]**
23/207 • • Uniting glass rods, glass tubes, or hollow glassware (C03B 23/24 takes precedence) **[3, 2006.01]**
23/213 • • • Joining projections or feet **[3, 2006.01]**
23/217 • • • for the production of cathode ray tubes or similarly shaped tubes **[3, 2006.01]**
23/22 • • Uniting glass lenses, e.g. forming bifocal lenses **[1, 2006.01]**
23/24 • • Making hollow glass sheets or bricks **[1, 2006.01]**
23/26 • Punching reheated glass **[1, 2006.01]**

<u>After-treatment of glass product</u>

25/00 **Annealing glass products** (after-treatment of fibres C03B 37/10) **[1, 2006.01]**
25/02 • in a discontinuous way **[1, 2006.01]**
25/04 • in a continuous way **[1, 2006.01]**
25/06 • • with horizontal displacement of the glass products **[3, 2006.01]**
25/08 • • • of glass sheets **[3, 2006.01]**
25/087 • • • • being in a vertical position **[5, 2006.01]**
25/093 • • • • being in a horizontal position on a fluid support, e.g. a gas or molten metal **[5, 2006.01]**
25/10 • • with vertical displacement of the glass products **[3, 2006.01]**
25/12 • • • of glass sheets **[3, 2006.01]**

27/00 **Tempering glass products** (after-treatment of fibres C03B 37/10) **[1, 2006.01]**
27/004 • by bringing the hot glass product in contact with a solid cooling surface, e.g. sand grains **[5, 2006.01]**
27/008 • by using heat of sublimation of solid particles **[5, 2006.01]**
27/012 • by heat treatment, e.g. for crystallisation; Heat treatment of glass products before tempering by cooling (C03B 27/008, C03B 27/016 take precedence) **[5, 2006.01]**
27/016 • by absorbing heat radiated from the glass product **[5, 2006.01]**
27/02 • using liquid **[3, 5, 2006.01]**
27/03 • • the liquid being a molten metal or a molten salt **[5, 2006.01]**
27/04 • using gas **[3, 2006.01]**
27/044 • • for flat or bent glass sheets being in a horizontal position **[5, 2006.01]**
27/048 • • • on a gas cushion **[5, 2006.01]**
27/052 • • for flat or bent glass sheets being in a vertical position **[5, 2006.01]**
27/056 • • • supported on the lower edge **[5, 2006.01]**
27/06 • • for glass products other than flat or bent glass plates, e.g. hollow glassware, lenses **[3, 2006.01]**

29/00 **Reheating glass products for softening or fusing their surfaces; Fire-polishing; Fusing of margins** (after-treatment of fibres C03B 37/10) **[1, 2006.01]**
29/02 • in a discontinuous way **[1, 2006.01]**
29/04 • in a continuous way **[1, 2006.01]**
29/06 • • with horizontal displacement of the products **[5, 2006.01]**
29/08 • • • Glass sheets **[5, 2006.01]**
29/10 • • • • being in a vertical position **[5, 2006.01]**
29/12 • • • • being in a horizontal position on a fluid support, e.g. a gas or molten metal **[5, 2006.01]**
29/14 • • with vertical displacement of the products **[5, 2006.01]**
29/16 • • • Glass sheets **[5, 2006.01]**

31/00 **Manufacture of rippled or crackled glass [1, 2006.01]**

32/00 **Thermal after-treatment of glass products not provided for in groups C03B 25/00-C03B 31/00, e.g. crystallisation, eliminating gas inclusions or other impurities** (after-treatment of fibres C03B 37/10) **[2, 2006.01]**
32/02 • Thermal crystallisation, e.g. for crystallising glass bodies into glass-ceramic articles **[5, 2006.01]**

33/00 **Severing cooled glass** (severing glass fibres C03B 37/16) **[1, 2006.01]**
33/02 • Cutting or splitting sheet glass; Apparatus or machines therefor (C03B 33/09 takes precedence; glass-cutting tools C03B 33/10) **[1, 3, 2006.01]**
33/023 • • the sheet being in a horizontal position **[5, 2006.01]**
33/027 • • • Scoring tool holders; Driving mechanisms therefor **[5, 2006.01]**
33/03 • • • Glass cutting tables; Apparatus for transporting or handling sheet glass during the cutting or breaking operations **[5, 2006.01]**

33/033 • • • Apparatus for opening score lines in glass sheets **[5, 2006.01]**
33/037 • • • Controlling or regulating **[5, 2006.01]**
33/04 • • Cutting or splitting in curves, especially for making spectacle lenses **[1, 2006.01]**
33/06 • Cutting or splitting glass tubes, rods, or hollow products (C03B 33/09 takes precedence) **[1, 3, 2006.01]**
33/07 • Cutting armoured or laminated glass products **[3, 2006.01]**
33/08 • by fusing **[1, 2006.01]**
33/085 • • Tubes, rods or hollow products **[5, 2006.01]**
33/09 • by thermal shock **[3, 2006.01]**
33/095 • • Tubes, rods or hollow products **[5, 2006.01]**
33/10 • Glass-cutting tools, e.g. scoring tools **[1, 2006.01]**
33/12 • • Hand tools **[3, 2006.01]**
33/14 • • • specially adapted for cutting tubes, rods or hollow products **[5, 2006.01]**

35/00 Transporting of glass products during their manufacture [1, 2, 2006.01]
35/04 • Transporting of hot hollow glass products (C03B 35/26 takes precedence) **[3, 2006.01]**
35/06 • • Feeding of hot hollow glass products into annealing or heating kilns **[3, 2006.01]**
35/08 • • • using rotary means directly acting on the products **[3, 2006.01]**
35/10 • • • using reciprocating means directly acting on the products, e.g. pushers, stackers **[3, 2006.01]**
35/12 • • • by picking-up and depositing **[3, 2006.01]**
35/14 • Transporting hot glass sheets **[3, 2006.01]**
35/16 • • by roller conveyors **[3, 2006.01]**
35/18 • • • Construction of the conveyor rollers **[3, 2006.01]**
35/20 • • by gripping tongs or supporting frames **[3, 2006.01]**
35/22 • • on a fluid support bed, e.g. on molten metal **[3, 2006.01]**
35/24 • • • on a gas support bed **[3, 2006.01]**
35/26 • Transporting of glass tubes or rods **[3, 2006.01]**

37/00 Manufacture or treatment of flakes, fibres, or filaments from softened glass, minerals, or slags [1, 2006.01]
37/005 • Manufacture of flakes **[5, 2006.01]**
37/01 • Manufacture of glass fibres or filaments **[3, 2006.01]**
37/012 • • Manufacture of preforms for drawing fibres or filaments **[4, 2006.01]**
37/014 • • • made entirely or partially by chemical means **[4, 2006.01]**
37/016 • • • • by a liquid phase reaction process, e.g. through a gel phase **[4, 2006.01]**
37/018 • • • • by glass deposition on a glass substrate, e.g. by chemical vapour deposition (C03B 37/016 takes precedence; surface treatment of glass by coating with glass C03C 17/02) **[4, 2006.01]**
37/02 • • by drawing or extruding (C03B 37/04 takes precedence) **[1, 3, 2006.01]**
37/022 • • • from molten glass in which the resultant product consists of different sorts of glass or is characterised by shape, e.g. hollow fibres **[4, 2006.01]**
37/023 • • • • Fibres composed of different sorts of glass, e.g. fibre optics **[4, 2006.01]**
37/025 • • • from reheated softened tubes, rods, fibres or filaments **[3, 2006.01]**
37/026 • • • • Drawing fibres reinforced with a metal wire **[5, 2006.01]**
37/027 • • • • Fibres composed of different sorts of glass, e.g. fibre optics (C03B 37/028 takes precedence) **[4, 2006.01]**
37/028 • • • • Drawing fibre bundles, e.g. for making fibre bundles of multifibres **[4, 2006.01]**
37/029 • • • • Furnaces therefor **[5, 2006.01]**
37/03 • • • Drawing means, e.g. drawing drums **[3, 2006.01]**
37/035 • • • • having means for deflecting or stripping-off fibres **[3, 2006.01]**
37/04 • • by using centrifugal force **[1, 3, 2006.01]**
37/05 • • • by projecting on a rotating body having no radial orifices **[3, 2006.01]**
37/06 • • by blasting or blowing molten glass, e.g. for making staple fibres **[1, 3, 2006.01]**
37/065 • • • starting from tubes, rods, fibres, or filaments **[3, 2006.01]**
37/07 • Controlling or regulating **[3, 2006.01]**
37/075 • Manufacture of fibres or filaments consisting of different sorts of glass or characterised by shape, e.g. hollow fibres, undulated fibres (C03B 37/022, C03B 37/027, C03B 37/028 take precedence) **[3, 4, 2006.01]**
37/08 • Bushings; Spinnerettes; Nozzles; Nozzle plates **[1, 2006.01]**
37/081 • • Indirect-melting bushings **[5, 2006.01]**
37/083 • • Nozzles; Bushing nozzle plates (C03B 37/095 takes precedence) **[5, 2006.01]**
37/085 • • Feeding devices therefor **[3, 2006.01]**
37/09 • • electrically heated **[3, 2006.01]**
37/092 • • • Direct-resistance heating **[5, 2006.01]**
37/095 • • Use of materials therefor **[3, 2006.01]**
37/10 • Non-chemical treatment (C03C 25/00 takes precedence) **[1, 2006.01]**
37/12 • • of fibres or filaments during winding up **[3, 2006.01]**
37/14 • • Re-forming fibres or filaments (C03B 37/025 takes precedence) **[3, 2006.01]**
37/15 • • • with heat application, e.g. for making optical fibres (fusion-splicing of light guides G02B 6/255; treatment of light guides to shape optical elements G02B 6/287) **[5, 2006.01]**
37/16 • • Cutting or severing (light guides G02B 6/25) **[3, 5, 2006.01]**

40/00 Preventing adhesion between glass and glass or between glass and the means used to shape it [3, 2006.01]
40/02 • by lubrication; Use of materials as release or lubricating compositions **[3, 2006.01]**
40/027 • • Apparatus for applying lubricants to glass shaping moulds or tools **[5, 2006.01]**
40/033 • • Means for preventing adhesion between glass and glass **[5, 2006.01]**
40/04 • using gas **[3, 2006.01]**

C03C CHEMICAL COMPOSITION OF GLASSES, GLAZES, OR VITREOUS ENAMELS; SURFACE TREATMENT OF GLASS; SURFACE TREATMENT OF FIBRES OR FILAMENTS FROM GLASS, MINERALS OR SLAGS; JOINING GLASS TO GLASS OR OTHER MATERIALS

Subclass index

CHEMICAL COMPOSITION
- For glasses 1/00, 3/00, 4/00, 6/00, 10/00-12/00
- For glazes, for vitreous enamels 1/00, 8/00
- For devitrified glass ceramics 10/00
- For fibres or filaments 13/00
- For glass containing a non-glass component 14/00

SURFACE TREATMENTS
- By diffusion into the surface 21/00
- By coating 17/00
- Other treatments 15/00, 19/00, 23/00
- Of fibres or filaments 25/00

JOINING 27/00, 29/00
GLASS OF SPECIAL STRUCTURE 10/00-12/00, 14/00

Chemical composition of glasses, glazes, or vitreous enamels

Note(s) [4]

In groups C03C 1/00-C03C 14/00, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

1/00 Ingredients generally applicable to manufacture of glasses, glazes or vitreous enamels [1, 2006.01]

1/02 • Pretreated ingredients **[1, 2006.01]**

1/04 • Opacifiers, e.g. fluorides or phosphates; Pigments **[1, 2006.01]**

1/06 • • to produce non-uniformly pigmented, e.g. speckled, marbled, or veined products **[1, 2006.01]**

1/08 • to produce crackled effects **[1, 2006.01]**

1/10 • to produce uniformly-coloured transparent products **[1, 2006.01]**

3/00 Glass compositions (glass batch compositions C03C 6/00) **[1, 4, 2006.01]**

3/04 • containing silica **[1, 4, 2006.01]**

Note(s) [4]

If silica is specified as being present in a percent range covered by two of the groups C03C 3/06, C03C 3/062 or C03C 3/076, classification is made in both groups. If the range is covered by the three groups, classification is made in group C03C 3/04 itself.

3/06 • • with more than 90% silica by weight, e.g. quartz **[1, 2006.01]**

3/062 • • with less than 40% silica by weight **[4, 2006.01]**

3/064 • • • containing boron **[4, 2006.01]**

3/066 • • • • containing zinc **[4, 2006.01]**

3/068 • • • • containing rare earths **[4, 2006.01]**

3/07 • • • containing lead **[4, 2006.01]**

3/072 • • • • containing boron **[4, 2006.01]**

3/074 • • • • • containing zinc **[4, 2006.01]**

3/076 • • with 40% to 90% silica by weight **[4, 2006.01]**

3/078 • • • containing an oxide of a divalent metal, e.g. an oxide of zinc **[4, 2006.01]**

3/083 • • • containing aluminium oxide or an iron compound **[4, 2006.01]**

3/085 • • • • containing an oxide of a divalent metal **[4, 2006.01]**

3/087 • • • • • containing calcium oxide, e.g. common sheet or container glass **[4, 2006.01]**

3/089 • • • containing boron **[4, 2006.01]**

3/091 • • • • containing aluminium **[4, 2006.01]**

3/093 • • • • • containing zinc or zirconium **[4, 2006.01]**

3/095 • • • containing rare earths **[4, 2006.01]**

3/097 • • • containing phosphorus, niobium or tantalum **[4, 2006.01]**

3/102 • • • containing lead **[4, 2006.01]**

3/105 • • • • containing aluminium **[4, 2006.01]**

3/108 • • • • containing boron **[4, 2006.01]**

3/11 • • • containing halogen or nitrogen **[4, 2006.01]**

3/112 • • • • containing fluorine **[4, 2006.01]**

3/115 • • • • • containing boron **[4, 2006.01]**

3/118 • • • • • • containing aluminium **[4, 2006.01]**

3/12 • Silica-free oxide glass compositions **[1, 4, 2006.01]**

3/14 • • containing boron **[1, 4, 2006.01]**

3/145 • • • containing aluminium or beryllium **[4, 2006.01]**

3/15 • • • containing rare earths **[4, 2006.01]**

3/155 • • • • containing zirconium, titanium, tantalum or niobium **[4, 2006.01]**

3/16 • • containing phosphorus **[1, 4, 2006.01]**

3/17 • • • containing aluminium or beryllium **[4, 2006.01]**

3/19 • • • containing boron **[4, 2006.01]**

3/21 • • • containing titanium, zirconium, vanadium, tungsten or molybdenum **[4, 2006.01]**

3/23 • • containing halogen and at least one oxide, e.g. oxide of boron **[4, 2006.01]**

3/247 • • • containing fluorine and phosphorus **[4, 2006.01]**

3/253 • • containing germanium **[4, 2006.01]**

3/32 • Non-oxide glass compositions, e.g. binary or ternary halides, sulfides, or nitrides of germanium, selenium or tellurium **[4, 2006.01]**

4/00 Compositions for glass with special properties [4, 2006.01]

Note(s) [4]

When classifying in group C03C 4/00, classification is also made in the appropriate subgroups of group C03C 3/00 according to the glass composition.

4/02 • for coloured glass **[4, 2006.01]**
4/04 • for photosensitive glass **[4, 2006.01]**
4/06 • • for phototropic or photochromic glass **[4, 2006.01]**
4/08 • for glass selectively absorbing radiation of specified wave lengths **[4, 2006.01]**
4/10 • for infra-red transmitting glass **[4, 2006.01]**
4/12 • for luminescent glass; for fluorescent glass **[4, 2006.01]**
4/14 • for electro-conductive glass **[4, 2006.01]**
4/16 • for dielectric glass **[4, 2006.01]**
4/18 • for ion-sensitive glass **[4, 2006.01]**
4/20 • for chemical resistant glass **[4, 2006.01]**

6/00 **Glass batch compositions** (single ingredients of batch compositions C03C 1/00) **[4, 2006.01]**

Note(s) [4]

This group covers also compositions which are intended to be heated sufficiently for their ingredients to fuse into a glass, e.g. glass furnace charges.

6/02 • containing silicates, e.g. cullet **[4, 2006.01]**
6/04 • containing uncombined silica, e.g. sand **[4, 2006.01]**
6/06 • containing halogen compounds **[4, 2006.01]**
6/08 • containing pellets or agglomerates **[4, 2006.01]**
6/10 • containing slag **[4, 2006.01]**

8/00 **Enamels; Glazes** (cold glazes for ceramics C04B 41/86)**; Fusion seal compositions being frit compositions having non-frit additions [4, 2006.01]**
8/02 • Frit compositions, i.e. in a powdered or comminuted form **[4, 2006.01]**
8/04 • • containing zinc **[4, 2006.01]**
8/06 • • containing halogen **[4, 2006.01]**
8/08 • • containing phosphorus **[4, 2006.01]**
8/10 • • containing lead **[4, 2006.01]**
8/12 • • • containing titanium or zirconium **[4, 2006.01]**
8/14 • Glass frit mixtures having non-frit additions, e.g. opacifiers, colorants, mill additions **[4, 2006.01]**
8/16 • • with vehicle or suspending agents, e.g. slip **[4, 2006.01]**
8/18 • • containing free metals **[4, 2006.01]**
8/20 • • containing titanium compounds; containing zirconium compounds **[4, 2006.01]**
8/22 • containing two or more distinct frits having different compositions **[4, 2006.01]**
8/24 • Fusion seal compositions being frit compositions having non-frit additions, i.e. for use as seals between dissimilar materials, e.g. glass and metal; Glass solders **[4, 2006.01]**

10/00 **Devitrified glass ceramics, i.e. glass ceramics having a crystalline phase dispersed in a glassy phase and constituting at least 50% by weight of the total composition [4, 2006.01]**
10/02 • Non-silica and non-silicate crystalline phase, e.g. spinel, barium titanate **[4, 2006.01]**
10/04 • Silicate or polysilicate crystalline phase, e.g. mullite, diopside, sphene, plagioclase **[4, 2006.01]**
10/06 • • Divalent metal oxide aluminosilicate crystalline phase, e.g. anorthite, slagcerams **[4, 2006.01]**
10/08 • • • Magnesium aluminosilicate, e.g. cordierite **[4, 2006.01]**
10/10 • • Alkali metal aluminosilicate crystalline phase **[4, 2006.01]**
10/12 • • • Lithium aluminosilicate, e.g. spodumene, eucryptite **[4, 2006.01]**
10/14 • Silica crystalline phase, e.g. stuffed quartz, cristobalite **[4, 2006.01]**
10/16 • Halogen-containing crystalline phase **[4, 2006.01]**

11/00 **Multi-cellular glass [1, 2006.01]**

12/00 **Powdered glass** (C03C 8/02 takes precedence)**; Bead compositions [1, 4, 2006.01]**
12/02 • Reflective beads **[4, 2006.01]**

13/00 **Fibre or filament compositions** (manufacture of fibres or filaments C03B 37/00) **[1, 2006.01]**
13/02 • containing compounds of titanium or zirconium **[4, 2006.01]**
13/04 • Fibre optics, e.g. core and clad fibre compositions **[4, 2006.01]**
13/06 • Mineral fibres, e.g. slag wool, mineral wool, rock wool **[4, 2006.01]**

14/00 **Glass compositions containing a non-glass component, e.g. compositions containing fibres, filaments, whiskers, platelets, or the like, dispersed in a glass matrix** (glass batch compositions C03C 6/00; devitrified glass-ceramics C03C 10/00) **[4, 2006.01]**

Surface treatment of glass; Surface treatment of fibres or filaments from glass, minerals or slags

Note(s) [4]

Treatment of materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone is classified in subclass C04B.

15/00 **Surface treatment of glass, not in the form of fibres or filaments, by etching [1, 2, 2006.01]**
15/02 • for making a smooth surface **[1, 2006.01]**

17/00 **Surface treatment of glass, e.g. of devitrified glass, not in the form of fibres or filaments, by coating [1, 2006.01]**
17/02 • with glass (C03C 17/34, C03C 17/44 take precedence) **[1, 3, 2006.01]**
17/04 • • by fritting glass powder **[1, 2006.01]**
17/06 • with metals (C03C 17/34, C03C 17/44 take precedence) **[1, 3, 2006.01]**
17/09 • • by deposition from the vapour phase **[3, 2006.01]**
17/10 • • by deposition from the liquid phase **[1, 2006.01]**
17/22 • with other inorganic material (C03C 17/34, C03C 17/44 take precedence) **[1, 3, 2006.01]**
17/23 • • Oxides (C03C 17/02 takes precedence) **[3, 2006.01]**
17/245 • • • by deposition from the vapour phase **[3, 2006.01]**
17/25 • • • by deposition from the liquid phase **[3, 2006.01]**
17/27 • • • by oxidation of a coating previously applied **[3, 2006.01]**
17/28 • with organic material (C03C 17/34, C03C 17/44 take precedence) **[1, 3, 2006.01]**
17/30 • • with silicon-containing compounds **[1, 2006.01]**
17/32 • • with synthetic or natural resins (C03C 17/30 takes precedence) **[1, 2006.01]**

17/34 • with at least two coatings having different compositions (C03C 17/44 takes precedence) **[3, 2006.01]**
17/36 • • at least one coating being a metal **[3, 2006.01]**
17/38 • • • at least one coating being a coating of an organic material **[3, 2006.01]**
17/40 • • • all coatings being metal coatings **[3, 2006.01]**
17/42 • • at least one coating of an organic material and at least one non-metal coating **[3, 2006.01]**
17/44 • Lustring **[3, 2006.01]**

19/00 Surface treatment of glass, not in the form of fibres or filaments, by mechanical means (sand-blasting, grinding, or polishing glass B24) **[1, 2006.01]**

21/00 Treatment of glass, not in the form of fibres or filaments, by diffusing ions or metals into the surface [1, 2006.01]

23/00 Other surface treatment of glass not in the form of fibres or filaments [1, 2006.01]

25/00 Surface treatment of fibres or filaments from glass, minerals, or slags [1, 2006.01]
25/10 • by coating **[7, 2006.01]**
25/12 • • General methods for coating; Devices therefor **[7, 2006.01]**
25/14 • • • Spraying **[7, 2006.01]**
25/16 • • • Dipping **[7, 2006.01]**
25/18 • • • using extrusion devices **[7, 2006.01]**
25/20 • • • Contacting the fibres with applicators, e.g. rolls **[7, 2006.01]**
25/22 • • • Deposition from the vapour phase **[7, 2006.01]**

Note(s) [7, 2006.01]

1. In groups C03C 25/24-C03C 25/48, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.
2. A coating composition, i.e. a mixture of two or more constituents, is classified in the last of groups C03C 25/24-C03C 25/42 that provides for at least one of these constituents.
3. When classifying in groups C03C 25/24-C03C 25/42 any individual constituent, i.e. compound or ingredient of a coating composition, which is not identified by the classification according to Note (2), and which itself is determined to be novel and non-obvious, must also be classified in the last appropriate place in groups C03C 25/24-C03C 25/42.
4. When classifying in groups C03C 25/24-C03C 25/42 any individual constituent of a coating composition which is not identified by the classification according to Note (2) or (3), and which is considered to represent information of interest for search, may also be classified in groups C03C 25/24-C03C 25/42. This can, for example, be the case when it is considered of interest to enable searching of coating compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

25/24 • • Coatings containing organic materials **[7, 2006.01]**
25/26 • • • Macromolecular compounds or prepolymers **[7, 2006.01]**
25/28 • • • • obtained by reactions involving only carbon-to-carbon unsaturated bonds, e.g. acrylic resins **[7, 2006.01]**
25/30 • • • • • Polyolefins **[7, 2006.01]**
25/32 • • • • obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds **[7, 2006.01]**
25/34 • • • • • Condensation polymers of aldehydes, e.g. with phenols, ureas, melamines, amides or amines **[7, 2006.01]**
25/36 • • • • • Epoxy resins **[7, 2006.01]**
25/38 • • • Organo-metallic compounds **[7, 2006.01]**
25/40 • • • Organo-silicon compounds **[7, 2006.01]**
25/42 • • Coatings containing inorganic materials **[7, 2006.01]**
25/44 • • • Carbon, e.g. graphite **[7, 2006.01]**
25/46 • • • Metals **[7, 2006.01]**
25/48 • • with two or more coatings having different compositions **[7, 2006.01]**

Note(s)

When classifying in this group, any individual coating which itself is determined to be novel and non-obvious must also be classified in groups C03C 25/24-C03C 25/42, according to Notes (1) to (4) before group C03C 25/24.

25/50 • • • Coatings containing organic materials only **[7, 2006.01]**
25/52 • • • Coatings containing inorganic materials only **[7, 2006.01]**
25/54 • • • Combinations of one or more coatings containing organic materials only with one or more coatings containing inorganic materials only **[7, 2006.01]**
25/60 • by diffusing ions or metals into the surface **[7, 2006.01]**
25/62 • by application of electric or wave energy or particle radiation, or by ion implantation (for drying or dehydration C03C 25/64) **[7, 2006.01]**
25/64 • Drying; Dehydration; Dehydroxylation **[7, 2006.01]**
25/66 • Chemical treatment, e.g. leaching, acid or alkali treatment (dehydroxylation C03C 25/64) **[7, 2006.01]**
25/68 • • by etching **[7, 2006.01]**
25/70 • Cleaning, e.g. for reuse (C03C 25/62-C03C 25/66 take precedence) **[7, 2006.01]**

Joining glass to glass or to other materials

Note(s)

Layered products classified in groups C03C 27/00 or C03C 29/00 are also classified in subclass B32B.

27/00 Joining pieces of glass to pieces of other inorganic material; Joining glass to glass other than by fusing (C03C 17/00takes precedence; fusion seal compositions C03C 8/24; wired glass C03B; joining glass to ceramics C04) **[1, 2006.01]**
27/02 • by fusing glass directly to metal **[1, 2006.01]**
27/04 • Joining glass to metal by means of an interlayer **[1, 2006.01]**
27/06 • Joining glass to glass by processes other than fusing **[1, 2006.01]**
27/08 • • with the aid of intervening metal **[1, 2006.01]**
27/10 • • with the aid of adhesive specially adapted for that purpose **[1, 2006.01]**

27/12 • • • Laminated glass (mechanical features in manufacture of glass laminates part of which is of plastic material B32B) **[1, 2006.01]**

29/00 Joining metals with the aid of glass [1, 2006.01]