

CPC COOPERATIVE PATENT CLASSIFICATION

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

NOTES

1. This subclass covers compositions of polycrystalline fibres
2. This subclass does not cover the preparation of single-crystal fibres, which is covered by subclass [C30B](#)

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:

C03C 6/00	covered by	C03C 1/00
C03C 10/02 - C03C 10/14	covered by	C03C 10/00
C03C 13/02	covered by	C03C 13/00
C03C 27/12	covered by	B32B 17/00

Chemical composition of glasses, glazes, or vitreous enamels

NOTE

In groups [C03C 1/00](#) - [C03C 14/00](#), 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

- 1/002 . {Use of waste materials, e.g. slags}
- 1/004 . {Refining agents ([refining C03B 5/225](#))}
- 1/006 . {to produce glass through wet route}
- 1/008 . . {for the production of films or coatings}
- 1/02 . Pretreated ingredients
- 1/022 . . {Purification of silica sand or other minerals}
- 1/024 . . {Chemical treatment of cullet or glass fibres}
- 1/026 . . {Pelletisation or prereacting of powdered raw materials ([apparatus or methods C03B 1/02](#))}
- 1/028 . . {Ingredients allowing introduction of lead or other easily volatile or dusty compounds}
- 1/04 . Opacifiers, e.g. fluorides or phosphates; Pigments
- 1/06 . . to produce non-uniformly pigmented, e.g. speckled, marbled, or veined products
- 1/08 . to produce crackled effects
- 1/10 . to produce uniformly-coloured transparent products
- 1/105 . . {by the addition of colorants to the forehearth of the glass melting furnace}

3/00 Glass compositions

- 3/04 . containing silica

NOTE

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.

- 3/045 . . {Silicon oxycarbide, oxynitride or oxycarbonitride glasses}
- 3/06 . . with more than 90% silica by weight, e.g. quartz {([C03C 3/045](#) takes precedence)}

- 3/061 . . . {by leaching a soluble phase and consolidating}
- 3/062 . . with less than 40% silica by weight
- 3/064 . . . containing boron
- 3/066 containing zinc
- 3/068 containing rare earths
- 3/07 . . . containing lead
- 3/072 containing boron
- 3/074 containing zinc
- 3/0745 {containing more than 50% lead oxide, by weight}
- 3/076 . . with 40% to 90% silica, by weight {([C03C 3/045](#) takes precedence)}
- 3/078 . . . containing an oxide of a divalent metal, e.g. an oxide of zinc
- 3/083 . . . containing aluminium oxide or an iron compound
- 3/085 containing an oxide of a divalent metal
- 3/087 containing calcium oxide, e.g. common sheet or container glass
- 3/089 . . . containing boron
- 3/091 containing aluminium
- 3/093 containing zinc or zirconium
- 3/095 . . . containing rare earths
- 3/097 . . . containing phosphorus, niobium or tantalum
- 3/102 . . . containing lead
- 3/105 containing aluminium
- 3/108 containing boron
- 3/11 . . . containing halogen or nitrogen
- 3/111 {containing nitrogen}
- 3/112 containing fluorine
- 3/115 containing boron
- 3/118 containing aluminium
- 3/12 . Silica-free oxide glass compositions
- 3/122 . . {containing oxides of As, Sb, Bi, Mo, W, V, Te as glass formers}
- 3/125 . . {containing aluminium as glass former}
- 3/127 . . {containing TiO₂ as glass former}
- 3/14 . . containing boron
- 3/142 . . . {containing lead}

- 3/145 . . . containing aluminium or beryllium
- 3/15 . . . containing rare earths
- 3/155 . . . containing zirconium, titanium, tantalum or niobium
- 3/16 . . containing phosphorus
- 3/17 . . . containing aluminium or beryllium
- 3/19 . . . containing boron
- 3/21 . . . containing titanium, zirconium, vanadium, tungsten or molybdenum
- 3/23 . . containing halogen and at least one oxide, e.g. oxide of boron
- 3/247 . . . containing fluorine and phosphorus
- 3/253 . . containing germanium
- 3/32 . Non-oxide glass compositions, e.g. binary or ternary halides, sulfides or nitrides of germanium, selenium or tellurium
- 3/321 . . {Chalcogenide glasses, e.g. containing S, Se, Te}
- 3/323 . . . {containing halogen, e.g. chalcogen halide glasses}
- 3/325 . . {Fluoride glasses}
- 3/326 . . . {containing beryllium}
- 3/328 . . {Nitride glasses}

4/00 Compositions for glass with special properties

NOTE

When classifying in group [C03C 4/00](#), classification is also made in the appropriate groups of group [C03C 3/00](#) according to the glass composition.

- 4/0007 . {for biologically-compatible glass}
- 4/0014 . . {Biodegradable glass}
- 4/0021 . . {for dental use}
- 4/0028 . {for crystal glass, e.g. lead-free crystal glass}
- 4/0035 . {for soluble glass for controlled release of a compound incorporated in said glass}
- 4/0042 . {for glass comprising or including particular isotopes}
- 4/005 . {for opaline glass}
- 4/0057 . {for ultrasonic delay lines glass}
- 4/0064 . {for self-destructing glass ([C03C 4/0014](#) takes precedence)}
- 4/0071 . {for laserable glass}
- 4/0078 . {for glass for dosimeters}
- 4/0085 . {for UV-transmitting glass}
- 4/0092 . {for glass with improved high visible transmittance, e.g. extra-clear glass}
- 4/02 . for coloured glass
- 4/04 . for photosensitive glass
- 4/06 . . for phototropic or photochromic glass
- 4/065 . . . {for silver-halide free photochromic glass}
- 4/08 . for glass selectively absorbing radiation of specified wave lengths
- 4/082 . . {for infra-red absorbing glass}
- 4/085 . . {for ultra-violet absorbing glass}
- 4/087 . . {for X-rays absorbing glass}
- 4/10 . for infra-red transmitting glass
- 4/12 . for luminescent glass; for fluorescent glass
- 4/14 . for electro-conductive glass
- 4/16 . for dielectric glass
- 4/18 . for ion-sensitive glass
- 4/20 . for chemical resistant glass

- 8/00 **Enamels; Glazes ([cold glazes for ceramics](#) ([C04B 41/48](#))); Fusion seal compositions being frit compositions having non-frit additions**
- 8/02 . Frit compositions, i.e. in a powdered or comminuted form
- 8/04 . . containing zinc
- 8/06 . . containing halogen
- 8/08 . . containing phosphorus
- 8/10 . . containing lead
- 8/12 . . . containing titanium or zirconium
- 8/14 . Glass frit mixtures having non-frit additions, e.g. opacifiers, colorants, mill-additions
- 8/16 . . with vehicle or suspending agents, e.g. slip
- 8/18 . . containing free metals
- 8/20 . . containing titanium compounds; containing zirconium compounds
- 8/22 . containing two or more distinct frits having different compositions
- 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
- 8/245 . . {containing more than 50% lead oxide, by weight}
- 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**
- 10/0009 . {containing silica as main constituent}
- 10/0018 . {containing SiO₂, Al₂O₃ and monovalent metal oxide as main constituents}
- 10/0027 . . {containing SiO₂, Al₂O₃, Li₂O as main constituents}
- 10/0036 . {containing SiO₂, Al₂O₃ and a divalent metal oxide as main constituents}
- 10/0045 . . {containing SiO₂, Al₂O₃ and MgO as main constituents}
- 10/0054 . {containing PbO, SnO₂, B₂O₃}
- 10/0063 . {containing waste materials, e.g. slags}
- 10/0072 . {having a ferro-electric crystal phase}
- 10/0081 . {having a magnetic crystal phase}
- 10/009 . {having a superconducting crystal phase}
- 10/16 . Halogen containing crystalline phase
- 11/00 **Multi-cellular glass; {Porous or hollow glass or glass particles}**
- 11/002 . {Hollow glass particles}
- 11/005 . {obtained by leaching after a phase separation step}
- 11/007 . {Foam glass, e.g. obtained by incorporating a blowing agent and heating}
- 12/00 **Powdered glass ([C03C 8/02](#) takes precedence); Bead compositions**
- 12/02 . Reflective beads
- 13/00 **Fibre or filament compositions ([manufacture of fibres or filaments](#) [C03B 37/00](#))**
- 13/001 . {Alkali-resistant fibres}
- 13/002 . . {containing zirconium}
- 13/003 . {Conducting or semi-conducting fibres}
- 13/005 . {obtained by leaching of a soluble phase and consolidation}
- 13/006 . {Glass-ceramics fibres}
- 13/007 . . {containing zirconium}

13/008	. {Polycrystalline optical fibres}	17/245	. . . by deposition from the vapour phase
13/04	. Fibre optics, e.g. core and clad fibre compositions (light guides G02B 6/00)	17/2453	. . . . {Coating containing SnO ₂ }
13/041	. . {Non-oxide glass compositions}	17/2456	. . . . {Coating containing TiO ₂ }
13/042	. . . {Fluoride glass compositions}	17/25	. . . by deposition from the liquid phase
13/043	. . . {Chalcogenide glass compositions}	17/253	. . . . {Coating containing SnO ₂ }
13/044	. . . . {containing halogen, e.g. chalcohalide glass compositions}	17/256	. . . . {Coating containing TiO ₂ }
13/045	. . {Silica-containing oxide glass compositions}	17/27	. . . by oxidation of a coating previously applied
13/046	. . . {Multicomponent glass compositions}	17/28	. with organic material (C03C 17/34, C03C 17/44 take precedence)
13/047	. . . {containing deuterium}	17/30	. . with silicon-containing compounds
13/048	. . {Silica-free oxide glass compositions}	17/32	. . with synthetic or natural resins (C03C 17/30 takes precedence)
13/06	. Mineral fibres, e.g. slag wool, mineral wool, rock wool	17/322	. . . {Polyurethanes or polyisocyanates}
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 (devitrified glass ceramics C03C 10/00)	17/324	. . . {Polyesters}
14/002	. {the non-glass component being in the form of fibres, filaments, yarns, felts or woven material}	17/326	. . . {Epoxy resins}
14/004	. {the non-glass component being in the form of particles or flakes}	17/328	. . . {Polyolefins}
14/006	. {the non-glass component being in the form of microcrystallites, e.g. of optically or electrically active material}	17/34	. with at least two coatings having different compositions (C03C 17/44 takes precedence)
14/008	. {the non-glass component being in molecular form}	17/3405	. . {with at least two coatings of organic materials (C03C 17/36, C03C 17/42 take precedence)}
Surface treatment of glass; Surface treatment of fibres or filaments from glass, minerals or slag		17/3411	. . {with at least two coatings of inorganic materials (C03C 17/36, C03C 17/42 take precedence)}
15/00	Surface treatment of glass, not in the form of fibres or filaments, by etching (etching or surface-brightening compositions, in general C09K 13/00)	17/3417	. . . {all coatings being oxide coatings}
15/02	. for making a smooth surface	17/3423	. . . {at least one of the coatings comprising a suboxide}
15/025	. . {for polishing crystal glass, i.e. lead glass}	17/3429	. . . {at least one of the coatings being a non-oxide coating}
17/00	Surface treatment of glass, not in the form of fibres or filaments, by coating (optical coatings of optical elements G02B 1/10)	17/3435	. . . . {comprising a nitride, oxynitride, boronitride or carbonitride}
17/001	. {General methods for coating; Devices therefor}	17/3441	. . . . {comprising carbon, a carbide or oxycarbide}
17/002	. . {for flat glass, e.g. float glass}	17/3447	. . . . {comprising a halide}
17/003	. . {for hollow ware, e.g. containers}	17/3452	. . . . . {comprising a fluoride}
17/004	. . . {Coating the inside}	17/3458	. . . . . {comprising a chloride}
17/005	. . . {Coating the outside}	17/3464	. . . . . {comprising a chalcogenide}
17/006	. {with materials of composite character}	17/347	. . . . . {comprising a sulfide or oxysulfide}
17/007	. . {containing a dispersed phase, e.g. particles, fibres or flakes, in a continuous phase}	17/3476	. . . . . {comprising a selenide or telluride}
17/008	. . {comprising a mixture of materials covered by two or more of the groups C03C 17/02, C03C 17/06, C03C 17/22 and C03C 17/28}	17/3482	. . . . . {comprising silicon, hydrogenated silicon or a silicide}
17/009	. . . {Mixtures of organic and inorganic materials, e.g. ormosils and ormocers}	17/3488	. . . . . {comprising a boride or phosphide}
17/02	. with glass (C03C 17/34, C03C 17/44 take precedence)	17/3494	. . . . . {comprising other salts, e.g. sulfate, phosphate}
17/04	. . by fritting glass powder	17/36	. . at least one coating being a metal
17/06	. with metals (C03C 17/34, C03C 17/44 take precedence)	17/3602	. . . {the metal being present as a layer}
17/09	. . by deposition from the vapour phase	17/3605	. . . . {Coatings of the type glass/metal/inorganic compound}
17/10	. . by deposition from the liquid phase	17/3607	. . . . {Coatings of the type glass/inorganic compound/metal}
17/22	. with other inorganic material (C03C 17/34, C03C 17/44 take precedence)	17/361	. . . . {Coatings of the type glass/metal/inorganic compound/metal/inorganic compound/other}
17/225	. . {Nitrides}	17/3613	. . . . {Coatings of type glass/inorganic compound/metal/inorganic compound/metal/other}
17/23	. . Oxides (C03C 17/02 takes precedence)	17/3615	. . . . {Coatings of the type glass/metal/other inorganic layers, at least one layer being non-metallic}
		17/3618	. . . . {Coatings of type glass/inorganic compound/other inorganic layers, at least one layer being metallic}
		17/3621	. . . . {one layer at least containing a fluoride}
		17/3623	. . . . {one layer at least containing a chloride, bromide or iodide}
		17/3626	. . . . {one layer at least containing a nitride, oxynitride, boronitride or carbonitride}

17/3628	. . . . {one layer at least containing a sulfide}	21/003	. . . {under application of an electrical potential difference}
17/3631	. . . . {one layer at least containing a selenide or telluride}	21/005	. . {to introduce in the glass such metals or metallic ions as Ag, Cu}
17/3634	. . . . {one layer at least containing carbon, a carbide or oxycarbide}	21/006	. . {to perform an exchange of the type $Xn+ \rightarrow nH+$ }
17/3636	. . . . {one layer at least containing silicon, hydrogenated silicon or a silicide}	21/007	. {in gaseous phase}
17/3639	. . . . {Multilayers containing at least two functional metal layers}	21/008	. {in solid phase, e.g. using pastes, powders}
17/3642	. . . . {the multilayer coating containing a metal layer}	23/00	Other surface treatment of glass not in the form of fibres or filaments
17/3644	. . . . {the metal being silver}	23/0005	. {by irradiation}
17/3647	. . . . {in combination with other metals, silver being more than 50%}	23/001	. . {by infra-red light}
17/3649	. . . . {made of metals other than silver}	23/0015	. . {by visible light}
17/3652	. . . . {the coating stack containing at least one sacrificial layer to protect the metal from oxidation}	23/002	. . {by ultra-violet light}
17/3655	. . . . {the multilayer coating containing at least one conducting layer}	23/0025	. . {by a laser beam}
17/3657	. . . . {the multilayer coating having optical properties}	23/003	. . {by X-rays}
17/366	. . . . . {Low-emissivity or solar control coatings}	23/0035	. . {by gamma-rays}
17/3663	. . . . . {specially adapted for use as mirrors}	23/004	. . {by electrons, protons or alpha-particles}
17/3665	. . . . . {specially adapted for use as photomask}	23/0045	. . {by neutrons}
17/3668	. . . . {the multilayer coating having electrical properties}	23/005	. . {by atoms}
17/3671	. . . . . {specially adapted for use as electrodes}	23/0055	. . {by ion implantation}
17/3673	. . . . . {specially adapted for use in heating devices for rear window of vehicles}	23/006	. . {by plasma or corona discharge}
17/3676	. . . . . {specially adapted for use as electromagnetic shield}	23/0065	. . {by microwave radiation}
17/3678	. . . . . {specially adapted for use in solar cells}	23/007	. {by thermal treatment}
17/3681	. . . . {the multilayer coating being used in glazing, e.g. windows or windscreens}	23/0075	. {Cleaning of glass (specially adapted to plate glass B08B 11/00)}
17/3684	. . . . {the multilayer coating being used for decoration purposes}	23/008	. {comprising a lixiviation step}
17/3686	. . . . {the multilayer coating being used for ovens}	23/0085	. {Drying; Dehydroxylation}
17/3689	. . . . {one oxide layer being obtained by oxidation of a metallic layer}	23/009	. {Poling glass}
17/3692	. . . . {one metallic layer being obtained by reduction of an oxide layer}	23/0095	. {Solution impregnating; Solution doping; Molecular stuffing, e.g. of porous glass (in manufacture of preforms C03B 37/012)}
17/3694	. . . . {one layer having a composition gradient through its thickness}	25/00	Surface treatment of fibres or filaments from glass, minerals, or slags {(woven fabrics D03; non-woven fabrics D04; treatment of fabrics in general or non-chemical aspects of treatment of glass fabrics D06M)}
17/3697	. . . . {one metallic layer at least being obtained by electroless plating}	25/002	. {by thermal treatment}
17/38	. . . at least one coating being a coating of an organic material	25/005	. {by mechanical means}
17/40	. . . all coatings being metal coatings	25/007	. {by solution impregnating; solution doping or molecular stuffing of porous glass}
17/42	. . at least one coating of an organic material and at least one non-metal coating	25/10	. by coating
17/44	. Lustring	25/1005	. . {with materials of composite character}
19/00	Surface treatment of glass, not in the form of fibres or filaments, by mechanical means (sand-blasting, grinding, or polishing glass B24)	25/101	. . . {containing particles, fibres or flakes, e.g. in a continuous phase}
21/00	Treatment of glass, not in the form of fibres or filaments, by diffusing ions or metals in the surface	25/1015	. . {with rubber latex-containing coatings}
21/001	. {in liquid phase, e.g. molten salts, solutions}	25/102	. . {Coating with colouring agent-containing compositions, e.g. for obtaining coloured textiles}
21/002	. . {to perform ion-exchange between alkali ions (C03C 21/005 takes precedence)}	25/1025	. . {Fibres used for reinforcing cement-based products}
		25/103	. . . {with organic coatings}
		25/1035	. . . {with inorganic coatings}
		25/104	. . {to obtain optical fibres}
		25/1045	. . . {with organic coatings or claddings}
		25/105	. . . . {Organic claddings}
		25/1055	. . . . {Organic coatings}
		25/106	. . . . . {Single coatings}
		25/1065	. . . . . {Multiple coatings}
		25/107	. . . {with inorganic coatings}
		25/1075	. . . . {Carbon}
		25/108	. . . . {Metals}
		25/1085	. . . . {Multiple inorganic coatings}

- 25/109 . . . {with at least one organic coating and at least one inorganic coating}
- 25/1095 . . {to obtain coated fabrics}
- 25/12 . . General methods for coating; Devices therefor
- 25/14 . . . Spraying, e.g. pulverisation
- 25/143 {Pulverisation on continuous fibres}
- 25/146 {Pulverisation on fibres in suspension in a gaseous medium}
- 25/16 . . . Dipping
- 25/18 . . . using extrusion devices
- 25/20 . . . Contacting the fibres with applicators, e.g. rolls
- 25/22 . . . Depositing from the vapour phase
- 25/223 {by chemical vapour deposition or pyrolysis}
- 25/226 {by sputtering}

NOTE

In groups [C03C 25/24](#) - [C03C 25/40](#), organic coating compositions also cover mixtures of organic and inorganic compounds. A coating composition which cannot be completely classified in a single one of groups [C03C 25/24](#) - [C03C 25/40](#) should be classified in each relevant group, in accordance with the following rules:

- Compositions containing only one macromolecular constituent and one or more conventional inorganic or non-macromolecular compounds, e.g. acids, solvents, are classified according to the macromolecular constituent only.
- Compositions containing two or more macromolecular constituents and further conventional inorganic or non-macromolecular compounds are classified according to the macromolecular constituent present in the highest proportion. If, however, the other macromolecular constituents represent invention information, classification is also made for these constituents.
- Compositions containing macromolecular constituents present in comparable proportions are classified according to these constituents.
- If non-macromolecular compounds in the composition also represent invention information, [C03C 25/38](#), for specific solvents, fillers, dyes or pigments, surfactants, biocides or the like in [C03C 25/24](#) or subgroups.

- 25/24 . . Coatings containing organic materials
- 25/243 . . . {Oils, waxes, fats or derivatives thereof}
- 25/246 . . . {Non-macromolecular compounds not covered by [C03C 25/243](#)}
- 25/26 . . . Macromolecular compounds or prepolymers, {e.g. sizing compositions}
- 25/28 obtained by reactions involving only carbon-to-carbon unsaturated bonds
- 25/285 {Acrylic resins}
- 25/30 Polyolefins
- 25/305 {Polyfluoro olefins}

- 25/32 obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds
- 25/321 {Starch or starch derivatives}
- 25/323 {Esters or alkyd resins}
- 25/325 {Polycarbonates}
- 25/326 {Polyureas or polyurethanes}
- 25/328 {Polyamides}
- 25/34 Condensation polymers of aldehydes, e.g. with phenol, ureas, melamines, amides or amines
- 25/36 Epoxy resins
- 25/38 . . . Organo-metal compounds
- 25/40 . . . Organo-silicon compounds
- 25/42 . . Coatings containing inorganic materials
- 25/44 . . . Carbon, e.g. graphite
- 25/46 . . . Metals
- 25/48 . . with two or more coatings having different compositions ({[C03C 25/104](#) takes precedence})

NOTE

If one or more of the individual coatings are of interest, for each of these coatings classification is also made in one or more of groups [C03C 25/24](#) - [C03C 25/46](#), in accordance with the note before group [C03C 25/24](#).

- 25/50 . . . Coatings containing organic materials only
- 25/52 . . . Coatings containing inorganic materials only
- 25/54 . . . Combinations of one or more coatings containing organic materials only with one or more coatings containing inorganic materials only
- 25/60 . . by diffusing ions or metals in the surface
- 25/601 . . {in the liquid phase, e.g. using molten salts or solutions}
- 25/602 . . . {to perform ion-exchange between alkali ions ([C03C 25/605](#) takes precedence)}
- 25/603 {under application of an electrical potential difference}
- 25/605 . . . {to introduce in the glass such metals or metallic ions as Ag or Cu}
- 25/606 . . . {to perform an exchange of the type $Xn^{+} \leftrightarrow nH^{+}$ }
- 25/607 . . {in the gaseous phase}
- 25/608 . . {in the solid phase, e.g. using pastes, powders}
- 25/62 . . by application of electric or wave energy or particle radiation, or by ion implantation (for drying or dehydration [C03C 25/64](#))
- 25/6206 . . {Electromagnetic waves}
- 25/6213 . . . {Infra-red}
- 25/622 . . . {Visible light}
- 25/6226 . . . {Ultra-violet}
- 25/6233 . . . {Laser}
- 25/624 . . . {X-rays}
- 25/6246 . . . {Gamma-rays}
- 25/6253 . . . {Microwaves}
- 25/626 . . {Particle radiation or ion implantation}
- 25/6266 . . . {Electrons, protons or alpha-particles}
- 25/6273 . . . {Neutrons}
- 25/628 . . . {Atoms}
- 25/6286 . . . {Ion implantation}
- 25/6293 . . {Plasma or corona discharge}

- 25/64 . Drying; Dehydration; Dehydroxylation
- 25/66 . Chemical treatment, e.g. leaching, acid alkali treatment ([dehydroxylation C03C 25/46](#))
- 25/68 . . by etching
- 25/70 . Cleaning, e.g. for reuse ([C03C 25/002](#), [C03C 25/62](#) and [C03C 25/66](#) take precedence)

Joining glass to glass or to other materials ([fusion seal compositions C03C 8/24](#))

NOTE

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 17/00](#) takes precedence; layered structures comprising at least one glass sheet [B32B 17/00](#); wired glass [C03B](#); joining glass to ceramics [C04](#))
- 27/005 . {with compositions containing more than 50% lead oxide by weight}
- 27/02 . by fusing glass directly to metal
- 27/04 . Joining glass to metal by means of an interlayer
- 27/042 . . {consisting of a combination of materials selected from glass, glass-ceramic or ceramic material with metals, metal oxides or metal salts}
- 27/044 . . . {of glass, glass-ceramic or ceramic material only}
- 27/046 . . . {of metals, metal oxides or metal salts only}
- 27/048 . . {consisting of an adhesive specially adapted for that purpose}
- 27/06 . Joining glass to glass by processes other than fusing ([fusing C03B 23/20](#); units for use as elements for closing wall or like openings and comprising two or more parallel glass panes in spaced relationship, the panes being permanently secured together [E06B 3/66](#))
- 27/08 . . with the aid of intervening metal
- 27/10 . . with the aid of adhesive specially adapted for that purpose
- 29/00** **Joining metals with the aid of glass**

2201/00 **Glass compositions**

- 2201/02 . Pure silica glass, e.g. pure fused quartz
- 2201/06 . Doped silica-based glasses
- 2201/08 . . containing boron or halide
- 2201/10 . . . containing boron ([C03C 2201/14](#) takes precedence)
- 2201/11 . . . containing chlorine
- 2201/12 . . . containing fluorine ([C03C 2201/14](#) takes precedence)
- 2201/14 . . . containing boron and fluorine
- 2201/20 . . containing non-metals other than boron or halide
- 2201/21 . . . containing molecular hydrogen
- 2201/22 . . . containing deuterium
- 2201/23 . . . containing hydroxyl groups
- 2201/24 . . . containing nitrogen, e.g. silicon oxy-nitride glasses
- 2201/26 . . . containing carbon
- 2201/28 . . . containing phosphorus

- 2201/30 . . containing metals
- 2201/31 . . . containing germanium
- 2201/32 . . . containing aluminium ([C03C 2201/36](#) takes precedence)
- 2201/34 . . . containing rare earth metals ([C03C 2201/36](#) takes precedence)
- 2201/3405 Scandium
- 2201/3411 Yttrium
- 2201/3417 Lanthanum
- 2201/3423 Cerium
- 2201/3429 Praseodymium
- 2201/3435 Neodymium
- 2201/3441 Samarium
- 2201/3447 Europium
- 2201/3452 Gadolinium
- 2201/3458 Terbium
- 2201/3464 Dysprosium
- 2201/347 Holmium
- 2201/3476 Erbium
- 2201/3482 Thulium
- 2201/3488 Ytterbium
- 2201/3494 Lutetium
- 2201/36 containing rare earth metals and aluminium, e.g. Er-Al co-doped
- 2201/40 . . . containing transition metals other than rare earth metals, e.g. Zr, Nb, Ta or Zn
- 2201/42 containing titanium
- 2201/50 . . . containing alkali metals
- 2201/54 . . . containing beryllium, magnesium or alkaline earth metals
- 2201/58 . . . containing metals in non-oxide form, e.g. CdSe
- 2201/60 . containing organic material
- 2201/80 . containing bubbles or microbubbles, e.g. opaque quartz glass

2203/00 **Production processes**

- 2203/10 . Melting processes
- 2203/20 . Wet processes, e.g. sol-gel process
- 2203/22 . . using colloidal silica sols
- 2203/24 . . using alkali silicate solutions
- 2203/26 . . using alkoxides
- 2203/27 . . . the alkoxides containing other organic groups, e.g. alkyl groups
- 2203/28 functional groups, e.g. vinyl, glycidyl
- 2203/30 . . Additives
- 2203/32 . . . Catalysts
- 2203/34 . . adding silica powder
- 2203/36 . . Gel impregnation
- 2203/40 . Gas-phase processes
- 2203/42 . . using silicon halides as starting materials
- 2203/44 . . . chlorine containing
- 2203/46 . . . fluorine containing
- 2203/50 . After-treatment
- 2203/52 . . Heat-treatment
- 2203/54 . . . in a dopant containing atmosphere

2204/00 **Glasses, glazes or enamels with special properties**

- 2204/02 . Antibacterial glass, glaze or enamel
- 2204/04 . Opaque glass, glaze or enamel
- 2204/06 . . opacified by gas
- 2204/08 . Glass having a rough surface

2205/00 Compositions applicable for the manufacture of vitreous enamels or glazes

- 2205/02 . for opaque enamels or glazes
- 2205/04 . for self-cleaning enamels or glazes
- 2205/06 . for dental use

2207/00 Compositions specially applicable for the manufacture of vitreous enamels

- 2207/02 . containing ingredients for securing a good bond between the vitrified enamel and the metal
- 2207/04 . for steel
- 2207/06 . for cast iron
- 2207/08 . for light metals
- 2207/10 . for copper, silver or gold

2209/00 Compositions specially applicable for the manufacture of vitreous glazes

- 2209/02 . to produce non-uniformly coloured glazes

2213/00 Glass fibres or filaments

- 2213/02 . Biodegradable glass fibres
- 2213/04 . Dual fibres

2214/00 Nature of the non-vitreous component

- 2214/02 . Fibres; Filaments; Yarns; Felts; Woven material
- 2214/03 . . surface treated, e.g. coated
- 2214/04 . Particles; Flakes
- 2214/05 . . surface treated, e.g. coated
- 2214/06 . Whiskers ss
- 2214/07 . . surface treated, e.g. coated
- 2214/08 . Metals
- 2214/10 . Superconducting materials
- 2214/12 . Polymers
- 2214/14 . Waste material, e.g. to be disposed of
- 2214/16 . Microcrystallites, e.g. of optically or electrically active material
- 2214/17 . in molecular form (for molecular composites)
- 2214/20 . Glass-ceramics matrix
- 2214/30 . Methods of making the composites
- 2214/32 . comprising a sol-gel process
- 2214/34 . comprising an impregnation by molten glass step

2217/00 Coatings on glass

- 2217/20 . Materials for coating a single layer on glass
- 2217/21 . . Oxides
- 2217/211 . . . SnO₂
- 2217/212 . . . TiO₂
- 2217/213 . . . SiO₂
- 2217/214 . . . Al₂O₃
- 2217/215 . . . In₂O₃
- 2217/216 . . . ZnO
- 2217/217 . . . FeOx, CoOx, NiOx
- 2217/218 . . . V₂O₅, Nb₂O₅, Ta₂O₅
- 2217/219 . . . CrOx, MoOx, WOx
- 2217/22 . . . ZrO₂
- 2217/228 . . . Other specific oxides
- 2217/229 . . . Non-specific enumeration
- 2217/23 . . . Mixtures
- 2217/231 In₂O₃/SnO₂
- 2217/232 CdO/SnO₂
- 2217/24 . . . Doped oxides
- 2217/241 with halides
- 2217/242 with rare earth metals
- 2217/243 with S, Se, Te

- 2217/244 with Sb
- 2217/25 . . Metals
- 2217/251 . . . Al, Cu, Mg or noble metals
- 2217/252 Al
- 2217/253 Cu
- 2217/254 Noble metals
- 2217/255 Au
- 2217/256 Ag
- 2217/257 . . . Refractory metals
- 2217/258 Ti, Zr, Hf
- 2217/259 V, Nb, Ta
- 2217/26 Cr, Mo, W
- 2217/261 . . . Iron-group metals, i.e. Fe, Co or Ni
- 2217/262 . . . Light metals other than Al
- 2217/263 . . . Metals other than noble metals, Cu or Hg

NOTE

This code is only to be used in combination with C03C classification symbols having the +IDT notation.

- 2217/268 . . . Other specific metals
- 2217/269 . . . Non-specific enumeration
- 2217/27 . . . Mixtures of metals, alloys
- 2217/28 . . Other inorganic materials
- 2217/281 . . . Nitrides
- 2217/282 . . . Carbides, silicides
- 2217/283 . . . Borides, phosphides
- 2217/284 . . . Halides
- 2217/285 Fluorides
- 2217/286 Chlorides
- 2217/287 . . . Chalcogenides
- 2217/288 Sulfides
- 2217/289 Selenides, tellurides
- 2217/29 . . Mixtures
- 2217/40 . Coatings comprising at least one inhomogeneous layer
- 2217/42 . . consisting of particles only
- 2217/425 . . consisting of a porous layer
- 2217/43 . . consisting of a dispersed phase in a continuous phase
- 2217/44 . . . characterized by the composition of the continuous phase
- 2217/445 Organic continuous phases
- 2217/45 Inorganic continuous phases
- 2217/452 Glass
- 2217/46 . . . characterized by the dispersed phase
- 2217/465 having a specific shape
- 2217/47 consisting of a specific material
- 2217/475 Inorganic materials
- 2217/476 Tin oxide or doped tin oxide
- 2217/477 Titanium oxide
- 2217/478 Silica
- 2217/479 Metals
- 2217/48 having a specific function
- 2217/485 Pigments
- 2217/70 . Properties of coatings
- 2217/71 . . Photocatalytic coatings
- 2217/72 . . Decorative coatings
- 2217/73 . . Anti-reflective coatings with specific characteristics
- 2217/732 . . . made of a single layer

- 2217/734 . . . comprising an alternation of high and low refractive indexes
- 2217/74 . . UV-absorbing coatings
- 2217/75 . . Hydrophilic and oleophilic coatings
- 2217/76 . . Hydrophobic and oleophobic coatings
- 2217/77 . . Coatings having a rough surface
- 2217/775 . . . to provide anti-slip characteristics
- 2217/78 . . Coatings specially designed to be durable, e.g. scratch-resistant
- 2217/90 . Other aspects of coatings
- 2217/91 . . Coatings containing at least one layer having a composition gradient through its thickness
- 2217/92 . . Coating of crystal glass
- 2217/93 . . Coatings containing a reinforcement comprising fibers or grids
- 2217/94 . . Transparent conductive oxide layers [TCO] being part of a multilayer coating
- 2217/944 . . . Layers comprising zinc oxide
- 2217/948 . . . Layers comprising indium tin oxide [ITO]
- 2218/00 Methods for coating glass**
- 2218/10 . Deposition methods
- 2218/11 . . from solutions or suspensions
- 2218/111 . . . by dipping, immersion
- 2218/112 . . . by spraying
- 2218/113 . . . by sol-gel processes
- 2218/114 . . . by brushing, pouring or doctorblading
- 2218/115 . . . electro-enhanced deposition
- 2218/116 . . . by spin-coating, centrifugation
- 2218/117 . . . by ultrasonic methods
- 2218/118 . . . by roller-coating
- 2218/119 . . . by printing
- 2218/13 . . from melts
- 2218/15 . . from the vapour phase
- 2218/151 . . . by vacuum evaporation
- 2218/152 . . . by cvd
- 2218/1525 by atmospheric CVD
- 2218/153 by plasma-enhanced cvd
- 2218/154 . . . by sputtering
- 2218/155 by reactive sputtering
- 2218/156 by magnetron sputtering
- 2218/17 . . from a solid phase
- 2218/30 . Aspects of methods for coating glass not covered above
- 2218/31 . . Pre-treatment
- 2218/32 . . After-treatment
- 2218/322 . . . Oxidation
- 2218/324 . . . De-oxidation
- 2218/326 . . . Nitriding
- 2218/328 . . . Partly or completely removing a coating
- 2218/33 by etching
- 2218/335 . . Reverse coating
- 2218/34 . . Masking
- 2218/345 . . Surface crystallisation
- 2218/35 . . Exuding
- 2218/355 . . Temporary coating
- 2218/36 . . Underside coating of a glass sheet
- 2218/365 . . Coating different sides of a glass substrate