

C03C

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

Definition statement

This place covers:

Chemical composition of

- glasses, glazes, vitreous enamels, frit compositions,
- devitrified glass ceramics
- structured glass such as powdered glass, multi-cellular, beads, fibres or filaments of glass
- glass with special properties such as coloured, photosensitive, luminescent, dielectric, ion-sensitive, chemical resistant

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

- coating with various materials
- mechanical treatment of glass
- diffusion of ions or metals into the surface
- drying, dehydration
- chemical treatment such as etching
- cleaning

Joining glass to glass or other materials by fusing, by specially adapted adhesive, interlayer

Joining metals with the aid of glass

Relationships with other classification places

- Ceramics, defined as mono or polycrystalline material, do not fall in the definition of [C03C](#) and are covered by [C04B 35/00](#).
- Laminates (or layered material) do not correspond to coatings on glass and are covered by [B32B](#).
- Coatings of fabrics (including made of glass fibers) is part of [D06M](#).
- Aspects relating to manufacture of glass (processes, furnace, shaping...) are covered by [C03B](#).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Amorphous metals, metallic glasse	B22F or C22C
Laminated material with one layer of glass	B32B 17/00
Processes for making glass	C03B
Organic glasses	C08L
Inks	C09D 5/00 or C09D 11/00
Pigments	C09K
Coating of fabrics	D06M
Mats made of glass fibers	D21H 13/40
Insulating glazings	E06B 3/00

Optical elements	G02B 5/00
Photomasks	G03F 1/00
Electrodes for solar cells, OLED	H01L 51/52
Low temp. cofired ceramics LTCC	H05K 1/16 , H01G 4/12 , C04B 35/468 , H01L 23/488

Special rules of classification

In the group [C03C 14/00](#) and its subgroups, the threshold for classifying a material as inorganic glass is that it comprises at least 50%. In the other groups of [C03C](#), glass is the only material.

Material comprising glass and ceramic made by sintering a mixture of glass and ceramic is classified in [C03C 14/00](#)

Multilayer coating of glass articles is classified in [C03C](#), e.g. [C03C 17/34](#) subgroups and laminates are classified in [B32B](#). A coating formed directly onto a substrate layer, which at the moment of its contact with the substrate does not have the form of a layer is not classified in [B32B](#) (layer is defined in glossary of terms section in [B32B](#)).

The database SADIQ is used in combination with classes [C03C 3/00](#), [C03C 8/00](#), [C03C 10/00](#), [C03C 11/00](#), [C03C 12/00](#), [C03C 13/00](#) and [C03C 14/00](#). Documents containing compositions of glass, enamel, glaze, devitrified glass, glass fiber are classified in SADIQ. The rules applied to index in SADIQ are:

- Documents claiming one or a range of composition(s) of glass, enamel, glaze, devitrified glass, glass fiber or documents describing such compositions which are not already part of prior art (e.g. commercialised products, well-known compositions) are indexed.
- One SADIQ record per (range of) compositions, including the optional components present in examples. A single document may correspond to several SADIQ records if it contains several compositions.
- The SADIQ record contains the document identifier (patent number or XP number for non-patent literature), the title, the publication date, the composition, the applications and properties if relevant, further information in INF field (such as ratio of FeO/Fe₂O₃, sum of components not predefined in the composition part or further properties/applications not listed before.)
- The composition in SADIQ is entered in weight percents for oxide or oxyhalide glasses
- The composition in SADIQ is entered in mol percents for fluoride glasses
- The composition in SADIQ is entered in atomic percents for chalcogenide glasses.
- See the SADIQ factsheet for further information.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Glass	amorphous material
Glass-ceramics	material having a crystalline phase dispersed in a glassy phase and obtained after formation of a solid glass
Glass batch	raws materials of glass before melting
Glass composition	Materials forming the glass after melting
Ceramic	monocrystalline or polycrystalline material
Glaze	Thin vitrified layer on a ceramic
Enamel	Thin vitrified layer on a metal or a glass
Slag	Partially vitrified by-product obtained when making metal

C03C 1/00

Ingredients generally applicable to manufacture of glasses, glazes, or vitreous enamels

Definition statement

This place covers:

Components, batch material which eventually become part of a glass. This subgroup covers the group **C03C6/00** in IPC.

References

Limiting references

This place does not cover:

Mechanical treatment of raw material (e.g. pelletisation)	C03B 1/00
Processes to produce glass by wet route (sol-gel)	C03B 19/12

C03C 3/00

Glass compositions

Definition statement

This place covers:

Compositions of glass.

References

Limiting references

This place does not cover:

Compositions of enamels, frits	C03C 8/00
Compositions of glass-ceramics	C03C 10/00
Compositions of glass fibers	C03C 13/00
Compositions of ceramics	C04B 35/00

Special rules of classification

- Classes are given according to examples of the invention (not comparative examples), not according to the general range of compositions
- Indexing Code [C03C 2201/00](#), [C03C 2203/00](#) and [C03C 2204/00](#) if necessary with class [C03C 3/06](#)
- If both the glass and the frit composition are claimed, classification is given in both [C03C 8/00](#) and [C03C 3/00](#) (or [C03C 10/00](#))
- Documents containing glass compositions and receiving a class in [C03C 3/00](#) are indexed in SADIQ. In classes [C03C 3/23](#) and [C03C 3/247](#), compositions are often expressed in ionic percents, which is not compatible with SADIQ; in this case, the relevant class is given, but the composition is not entered in SADIQ.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Glass	amorphous structure
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C03C 4/00

Compositions for glass with special properties

Definition statement

This place covers:

Glass with special properties, e.g UV absorbing, bioactive glass, The special properties are related to chemical, biological, physical properties, e.g. biodegradable, coloured, photosensitive, dielectric

Relationships with other classification places

Classification is made in [C03C 4/00](#) in combination with relevant classes in [C03C 3/00](#), [C03C 8/00](#) and [C03C 10/00](#).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Laser glass	H01S 3/17
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Special rules of classification

Indexing Code [C03C 2204/00](#) used in combination with [C03C 4/00](#).

C03C 8/00

Enamels; Glazes (cold glazes for ceramics {[C04B 41/48](#)}); Fusion seal compositions being frit compositions having non-frit additions

Definition statement

This place covers:

- Frit compositions of glaze, vitreous enamels and sealing that are not classified in the more specific subgroups, e.g. enamel or glaze which do not contain features of the subgroups

References

Limiting references

This place does not cover:

Cold glazes for ceramics	C04B 41/48
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Conductive bodies	H01B 1/00
Electrodes	H01L 31/0224

Fuel cells	H01M 8/028
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Special rules of classification

- Last place rule applies.
- Glass solders, compositions for sealing fuel cells or barrier ribs are covered by subgroup [C03C 8/24](#).
- If both the glass and the frit composition are claimed, classification is given in both [C03C 8/00](#) and [C03C 3/00](#) or [C03C 10/00](#).
- Indexing Code [C03C 2204/00](#), [C03C 2205/00](#), [C03C 2207/00](#) and [C03C 2209/00](#) are used in combination with [C03C 8/00](#).
- Documents containing frit compositions and receiving a symbol in [C03C 8/00](#) are indexed in SADIQ.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Glass	amorphous structure
Ceramic	monocrystalline or polycrystalline material
Glaze	Thin vitrified layer on a ceramic
Enamel	Thin vitrified layer on a metal or a glass
Frit	Ceramic composition that has been fused, quenched to form a glass, and granulated. Frits are used in compounding enamels

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "vehicle" and "solvent"

C03C 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

Definition statement

This place covers:

Devitrified glass compositions, whatever the % of crystalline phase in the glass (amorphous) phase is.

Compositions containing crystalline phase embedded in a glassy (amorphous) phase, which crystalline phase is produced by cooling a molten glass composition to a temperature which causes a portion only of the composition to crystallize while the remainder of the composition (the matrix) solidified in the amorphous or glass state)

References

Limiting references

This place does not cover:

Processes for making glass-ceramics	C03B 32/00
Ceramics	C04B 35/00

Special rules of classification

- Subgroups [C03C 10/0054](#) - [C03C 10/16](#) can be combined with subgroups [C03C 10/0009](#) - [C03C 10/0045](#) if applicable.
- Classes are given according to examples of the invention (not comparative examples), not according to the general range of compositions.
- Indexing Code [C03C 2204/00](#) are used in combination with [C03C 10/00](#).
- Documents containing glass compositions and receiving a class in [C03C 10/00](#) are indexed in SADIQ.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "glass-ceramics" and "devitrified glass"

C03C 11/00

Multi-cellular glass {; Porous or hollow glass or glass particles}

Definition statement

This place covers:

Multi-cellular glass, e.g. Hollow glass, hollow glass particles, porous glass, porous glass particles, foam glass.

Compositions other than glass compositions which are multicellular, or which are to be further treated to produce multicellular products, or processes for producing such products.

Note : a positive pore-forming step is required for classifying a claim herein and porosity due to the presence of a naturally porous substance is not sufficient for classifying herein.

References

Limiting references

This place does not cover:

Manufacture of multi-cellular glass	C03B
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Special rules of classification

Documents containing glass compositions and receiving a class in [C03C 11/00](#) are indexed in SADIQ.

C03C 12/00

Powdered glass ([C03C 8/02](#) takes precedence); Bead compositions

Definition statement

This place covers:

Compositions of glass as powder (except glaze, enamel, sealing), of glass as bead and flake.

Subject matter wherein the glass is present in the form of discrete lumps or small shaped self-supporting pieces larger than what may be considered as powder or compositions specifically intended to be made into beads.

References

Limiting references

This place does not cover:

Frit compositions	C03C 8/00
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Special rules of classification

Documents containing glass compositions and receiving a class in [C03C 12/00](#) are indexed in SADIQ.

C03C 13/00

Fibre or filament compositions (manufacture of fibres or filaments [C03B 37/00](#))

Definition statement

This place covers:

- Compositions of fibre or filaments, e.g. glass-ceramic fibres, fibre optics, mineral fibres

References

Limiting references

This place does not cover:

Manufacture of fibres or filaments	C03B 37/00
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Special rules of classification

- [C03C 13/001](#) covers alkali-resistant fibres and fibers resisting to a low pH
- Man-made mineral fibers are classified in [C03C 13/00](#). Fibers from natural origin (e.g. from basalt) are classified in [C03C 13/06](#).
- Indexing Code [C03C 2213/00](#) are used in combination with [C03C 13/00](#).
- Documents containing glass compositions and receiving a class in [C03C 13/00](#) are indexed in SADIQ.
- If both the glass composition and the fiber are claimed, classification is given in both [C03C 13/00](#) and [C03C 3/00](#) or [C03C 10/00](#).

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Multicomponent glass fiber	glass fiber containing further components besides SiO ₂ (e.g. doped)
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C03C 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](#))

Definition statement

This place covers:

Glass compositions containing non-glass components, e.g. fibres, whiskers, the percentage of glass in the composition being at least 50%

References

Limiting references

This place does not cover:

Glass-ceramics	C03C 10/00
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Special rules of classification

- Indexing Code [C03C 2214/00](#) and [C03C 2214/20](#) used in combination with [C03C 14/00](#).
- Documents containing glass compositions and receiving a class in [C03C 14/00](#) are indexed in SADIQ.

C03C 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](#))

Definition statement

This place covers:

Etching by chemical means and by dry methods ,e.g. laser gaseous or plasma etching

References

Limiting references

This place does not cover:

Mechanical treatments of glass	C03C 19/00
Cleaning of glass	C03C 23/0075
Leaching of glass	C03C 23/008
Etching or surface-brightening compositions, in general	C09K 13/00

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Etching	taking away part of the glass, independently of nature of ions
Chemical etching	Any intentional change of shape of an glass article or substrate by the removal of material involving a chemical reaction or physical solvation using a chemical agent (the etchant)
Leaching	taking away specific ions of the glass

Cleaning	taking away matter that does not form part of the glass
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C03C 17/00

Surface treatment of glass, not in the form of fibres or filaments, by coating (optical coatings of optical elements [G02B 1/10](#))

Definition statement

This place covers:

Surface treatment by coating on a glass substrate that is not in the form of fibers or filaments, the base material being the glass substrate, e.g. flat glass, glass container, bottle.

No adhesive is used when coating, e.g. plating of nickel on glass is considered as a coating obtained by plating and is classified in this group

Relationships with other classification places

Surface treatment of glass, not in the form of fibres or filaments other than by coating are classified in other subgroups of [C03C](#), e.g. surface treatment of glass by mechanical means is classified in [C03C 19/00](#), surface treatment of glass by thermal treatment is classified in [C03C 23/007](#)

References

Limiting references

This place does not cover:

Laminates	B32B
Coating on a ceramic substrate	C04B
Coating on a plastic substrate	C08J 7/00
Coating on a metallic substrate	C23D
Coating on a fabric	D06M
Optical coatings of optical elements	G02B 1/10

Informative references

Attention is drawn to the following places, which may be of interest for search:

Coatings on glass bottles	B65D 23/08
Coating apparatus by sputtering or vapour phase	C23C 14/00 , C23C 16/00
Coating of solar cells	H01L 31/0216

Special rules of classification

- All coatings in [C03C 17/36](#) are classified in [C03C 17/36](#) and below if appropriate.
- Indexing Code [C03C 2217/00](#) and [C03C 2218/00](#) are used in combination with [C03C 17/00](#).

C03C 19/00

Surface treatment of glass, not in the form of fibres or filaments, by mechanical means (sand-blasting, grinding, or polishing glass [B24](#))

Definition statement

This place covers:

Mechanical treatment of glass surface

References

Limiting references

This place does not cover:

Sand-blasting, grinding, or polishing glass	B24
Polishing compositions	C09G 1/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Grinding, crushing	B02C
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C03C 21/00

Treatment of glass, not in the form of fibres or filaments, by diffusing ions or metals in the surface

Definition statement

This place covers:

Diffusion of ions or metals in the surface of the glass in liquid, gaseous and solid phase e.g. ion-exchange in glass.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Processes and apparatus for ion-exchange	B01J 47/00
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C03C 23/00

Other surface treatment of glass not in the form of fibres or filaments

Definition statement

This place covers:

Treatments of glass not in form or fibres or filaments not covered elsewhere in [C03C](#), Treatments of the surface or the inside of the glass, e.g. laser treatment on the surface or the inside of the glass depending on the laser's focus.

References

Limiting references

This place does not cover:

Etching glass	C03C 15/00
Pretreatment before coating glass (e.g. cleaning)	C03C 2218/31
Fire-polishing of glass	C03B

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Etching	taking away part of the glass, independently of nature of ions
Leaching	taking away specific ions of the glass
Cleaning	taking away matter that does not form part of the glass

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "Lixiviation", "skeletonization " and " leaching"

C03C 25/00

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

Definition statement

This place covers:

Coating and other surface treatment applied to glass fibres and glass filaments, fibres being single fibres or bundle of fibres

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Woven fabrics	D03
Non-woven fabrics	D04
Treatment of fibres	D06M

Special rules of classification

- [C03C 25/26](#): all sizing compositions should be classified in this class and additionally in the subgroups if appropriate
- Coatings on optical glass fibres are solely to be classified in [C03C 25/104](#) and subgroups.
- Ion exchange for fibres is classified in [C03C 25/60](#), the coating being at the surface of the fibres or penetrating into the body of the fibres.
- Treatment of mat comprising glass fibres (woven or non woven) is not classified in [C03C](#), but in [D06M](#)

C03C 25/104

to obtain optical fibres

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Manufacture of glass fibres or filaments by drawing or extruding	C03B 37/023
Optical fibres with cladding, with or without a coating	G02B 6/02

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Cladding	Layer arranged around a core, in which optical properties of the cladding and the core, e.g. refractive index, are different.
Coating	Layer of plastics or other materials to give non-optical properties, e.g. mechanical properties, to a finished optical fibre.

C03C 25/465

Coatings containing composite materials

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Composite material	Material made from two or more compounds with different physical or chemical properties
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C03C 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](#))

Definition statement

This place covers:

- Joining glass to glass, e.g. with the aid of adhesive,
- Joining glass to metal, e.g. by fusing, by an interlayer
- Joining glass to other inorganic material except glass to ceramics.
- The IPC class **C03C27/12** is covered by [B32B 17/00](#).

Relationships with other classification places

Joining of two pieces of glass by fusing is classified in [C03B](#)

References

Limiting references

This place does not cover:

Laminated glass	B32B 17/00
Wired glass	C03B
Joining glass to ceramics	C04

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sealing for car windows	B60J 1/00
Sealing of discharge tubes	H01J 9/24

C03C 29/00

Joining metals with the aid of glass

Definition statement

This place covers:

Sealing or joining two parts of metal with the aid of glass.