# 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 s 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 |
| Low temp. cofired ceramics LTCC | H05K 1/16, H01G 4/12, C04B 35/468, H01L 23/488 |
| Electrodes for solar cells, OLED | H10K 50/80 |

## Special rules of classification

In the group C03C 14/00 and its subgroups, the treshold for classifiying 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 |

## 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, dielectic

### 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 |

### Special rules of classification

Indexing Code C03C 2204/00 used in combination with C03C 4/00.

## C03C 8/00

### Enamels; Glazes; 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

#### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

| | |
|---|---|
| Cold glazes for ceramics | C04B 41/86 |

#### *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 |

## 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 muti-cellular glass | C03B |

## 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 |

## 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 |

## 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 SiO2 (e.g. doped) |

## 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 |

#### 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 |

# 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 meachnical 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 |

## 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 |

## 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 |

## 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.