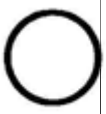
# Council Directive of 15 December 1969 on the approximation of the laws of the Member States relating to crystal glass (69/493/EEC)

# ANNEX I

## List of crystal categories

| No | Description of category | | Characteristics | | | | | Labelling | |
|---|---|---|---|---|---|---|---|---|---|
| | | Explanatory notes | Metal oxides (%) | Density | Refractive index | Surface hardness | | Shape of symbol | Remarks |
| —a— | —b— | —c— | —d— | —e— | —f— | —g— | | —h— | —i— |
| 1 | CRISTAL 30% SUPERIEUR<br>CRISTAL 30% SUPERIORE<br>HOCHBLEIKRISTALL 30%<br>VOLLOOD-KRISTAL 30%<br>[F1FULL LEAD CRYSTAL 30 %<br>KRYSTAL 30 %]<br>[F2]<br>[F3κρύσταλλο 30 %] υψηλής περιεκτικότητος σε μόλυβδο<br>[F4CRISTAL 30 % SUPERIOR<br>CRISTAL 30 %] DE CHUMBO SUPERIOR<br>[F5VYSOCE 30 %] OLOVNATÉ KŘIŠŤÁLOVÉ SKLO]<br>[F5KÕRGKVALITEETNE 30 % KRISTALL]<br>[F5AUGSTĀKAS 30 % LABUMA KRISTĀLS] | Description may be freely used, whatever the country of origin or the country of destination The percentage figure refers to the lead oxide content | PbO ≥ 30% | ≥ 3·00 | [a] | |  | Round label. Colour: gold ≥ 1 cm |

**a** $n_D \geq 1{\cdot}545$ as a criterion for an additional non-destructive determination of the products (at the time of import).

**b** In Belgium.

**c** In the Netherlands.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | [F5DAUGIAU KRIŠTOLAS] | [F5 30 %] | | | | | | |
| | [F5NEHÉZ ÓLOMKRISTÁLY] | [F5 30 %] | | | | | | |
| | [F5KRISTALI SUPERJURI] | [F5 30 %] | | | | | | |
| | [F5SZKŁO KRYSZTAŁOWE WYSOKOOŁOWIOWE] | [F5 30 %] | | | | | | |
| | [F5KRISTALI Z VISOKO VSEBNOSTJO SVINCA] | [F5 30 %] | | | | | | |
| | [F5VYSOKOOLOVNATÉ KRIŠTÁĽOVÉ SKLO] | [F5 30 %] | | | | | | |
| | [F6ТЕЖЪК ОЛОВЕН КРИСТАЛ] | 30 % | | | | | | |
| | CRISTALI SUPERIOR | 30 %] | | | | | | |
| 2 | CRISTALI AU PLOMB | 24% | PbO ≥ 24% | ≥ 2·90 | [a] | | | |
| | CRISTALLO AL PIOMBO | 24% | | | | | | |
| | BLEIKRISTALL | 24 % | | | | | | |
| | LOODKRISTAL | 24 % | | | | | | |
| | [F1LEAD CRYSTAL | 24 % | | | | | | |
| | KRYSTAL | 24 %] | | | | | | |
| | [F2] | | | | | | | |
| | [F3μολυβδούχος κρύσταλλο | 24 %] | | | | | | |
| | [F4ΜΟΛΥΒΔΟΥΧΑ ΚΡΥΣΤΑΛΛΑ | 24 % | | | | | | |

**a** nD ≥ 1·545 as a criterion for an additional non-destructive determination of the products (at the time of import).

**b** In Belgium.

**c** In the Netherlands.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CRISTAL 24 % PLOMO | | | | | | | |
| | CRISTAL 24 %] DE CHUMBO | | | | | | | |
| | [F5OLOVNATO 24 %] KŘIŠŤÁLOVÉ SKLO] | | | | | | | |
| | [F5KVALITNO 24 %] KRISTALL] | | | | | | | |
| | [F5KVALITETNO 24 %] KRISTALL] | | | | | | | |
| | [F5ŠVINOVO 24 %] KRIŠTOLAS] | | | | | | | |
| | [F5ÓLOMKRISTÁLY 24 %] | | | | | | | |
| | [F5KRISTAL 24 %] BIC-ĊOMB] | | | | | | | |
| | [F5SZKŁO 24 %] KRYSZTAŁOWE OŁOWIOWE] | | | | | | | |
| | [F5SVINČENO 24 %] KRISTAL] | | | | | | | |
| | [F5OLOVNATO 24 % KRIŠTÁĽOVÉ SKLO] | | | | | | | |
| | [F6ОЛОВЕН 24 % КРИСТАЛ] | | | | | | | |
| | CRISTAL 24 %] CU PLUMB | | | | | | | |
| 3 | CRISTALLIN | Only the description in the language or languages of the country in | ZnO BaO PbO K2O singly or together ≥ 10% | ≥ 2·45 | nD ≥ 1·520 | | | Square label. Colour: silver Side: ≥ 1 cm |
| | VETRO SONORO SUPERIORE | | | | | | | |
| | KRISTALLGLAS | | | | | | | |
| | KRISTALLIJNGLAS[b] | | | | | | | |
| | SONOORGLAS[c] | | | | | | | |

**a** nD ≥ 1·545 as a criterion for an additional non-destructive determination of the products (at the time of import).

**b** In Belgium.

**c** In the Netherlands.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | [F1CRYSTAL GLASS, CRYSTALLIN<br>KRYSTALLIN]<br>[F2]<br>[F3υαλοκρύσταλλα]<br>[F4VIDRIO SONORO SUPERIOR<br>VIDRO SONORO SUPERIOR]<br>[F5KŘIŠŤÁLOVÉ SKLO KRYSTALIN]<br>[F5KRISTALLIINKRISTAAS]<br>[F5KRISTĀLSTIKLS]<br>[F5KRIŠTOLAS]<br>[F5KRISZTALLIN ÜVEG]<br>[F5KRISTALLIN]<br>[F5SZKŁO KRYSZTAŁOWE ‘S]’<br>[F5KRISTALNO STEKLO (KRISTALIN)]<br>[F5KRIŠTALÍN]<br>[F6КРИСТАЛИН<br>STICLĂ CRISTALINĂ] | which the goods are marketed may be used Exception: On the German market pressed glass containing 18% PbO and having a density of at least 2·70 may be sold under the description ‘PRESSBLEIKRISTALL’ or ‘BLEIKRISTALL GEPRESST’ (in capital letters) | | | | | | |
| 4 | VERRE SONORE<br>VETRO SONORO<br>KRISTALLGLAS | | BaO PbO K2O single or | ≥ 2·40 | | Vickers — 550 ± 20 | △ | Label in the shape of an equilateral triangle. |

**a** nD ≥ 1·545 as a criterion for an additional non-destructive determination of the products (at the time of import).

**b** In Belgium.

**c** In the Netherlands.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | SONOORGLAS | | together ≥ 10% | | | | | Colour: silver Side: ≥ 1 cm |
| | [F1CRYSTAL GLASS, CRYSTALLIN | | | | | | | |
| | KRYSTALLIN] | | | | | | | |
| | [F2] | | | | | | | |
| | [F3υαλοκρύσταλλα] | | | | | | | |
| | [F4VIDRIO SONORO | | | | | | | |
| | VIDRO SONORO] | | | | | | | |
| | [F5KŘIŠŤÁLOVÉ SKLO] | | | | | | | |
| | [F5KRISTALLKLAAS] | | | | | | | |
| | [F5KRISTĀLSTIKLS] | | | | | | | |
| | [F5KRIŠTOLO STIKLAS] | | | | | | | |
| | [F5KRISZTALIN ÜVEG] | | | | | | | |
| | [F5KRISTALLIN] | | | | | | | |
| | [F5SZKŁO KRYSZTAŁOWE] | | | | | | | |
| | [F5KRISTALNO STEKLO] | | | | | | | |
| | [F5KRIŠTÁĽOVÉ SKLO] | | | | | | | |
| | [F6КРИСТАЛНО СТЪКЛО | | | | | | | |
| | CRISTALIN — STICLĂ SONORĂ] | | | | | | | |

**a** nD ≥ 1·545 as a criterion for an additional non-destructive determination of the products (at the time of import).

**b** In Belgium.

**c** In the Netherlands.

**Textual Amendments**

**F1** Inserted by Act concerning the Conditions of Accession and the Adjustments to the Treaties.

**F2** Deleted by Council Decision of the European Communities of 1 January 1973 adjusting the instruments concerning the accession of the new Member States to the European Communities.

**F3** Inserted by Act concerning the conditions of accession of the Hellenic Republic and the adjustments to the Treaties.

**F4** Inserted by Act concerning the conditions of accession of the Kingdom of Spain and the Portuguese Republic and the adjustments to the Treaties.

**F5** Inserted by Act concerning the conditions of accession of the Czech Republic, the Republic of Estonia, the Republic of Cyprus, the Republic of Latvia, the Republic of Lithuania, the Republic of Hungary, the Republic of Malta, the Republic of Poland, the Republic of Slovenia and the Slovak Republic and the adjustments to the Treaties on which the European Union is founded.

**F6** Inserted by Council Directive 2006/96/EC of 20 November 2006 adapting certain Directives in the field of free movement of goods, by reason of the accession of Bulgaria and Romania.

# ANNEX II

## METHODS FOR DETERMINING THE CHEMICAL AND PHYSICAL PROPERTIES OF CATEGORIES OF CRYSTAL GLASS

### 1. CHEMICAL ANALYSES

#### 1.1. BaO and PbO

##### 1.1.1. Determination of the combination BaO + PbO

Weigh, to within 0·0001 grammes, approximately 0·5 grammes of powdered glass and place in a platinum dish. Moisten with water and add 10 millilitres of a 15% solution of sulphuric acid and 10 millilitres hydrofluoric acid. Heat in sand bath until white fumes are given off. Allow to cool and treat again with 10 millilitres hydrofluoric acid. Heat until reappearance of white fumes. Allow to cool and rinse the sides of the dish with water. Heat until reappearance of white fumes. Allow to cool, carefully add 10 millilitres of water, then transfer to a 400 millilitres beaker. Rinse the dish several times with a 10% sulphuric acid solution and dilute to 100 millilitres with same solution. Boil for 2-3 minutes. Leave to stand overnight.

Pass through a filtering crucible of 4 porosity, wash first of all with a 10% solution of sulphuric acid, then two or three times with ethyl alcohol. Dry for one hour in an oven at 150 °C. Weigh $BaSO_4 + PbSO_4$.

##### 1.1.2. Determination of BaO

Weigh, to within 0·0001 grammes, about 0·5 grammes of powdered glass and place in a platinum dish. Moisten with water and add 10 millilitres of hydrofluoric acid and 5 millilitres perchloric acid. Heat in sand bath until white fumes are given off.

Allow to cool and add a further 10 millilitres hydrofluoric acid. Heat until reappearance of white fumes. Allow to cool and rinse the sides of the dish with distilled water. Heat again and evaporate until almost dry. Start again with 50 millilitres of a 10% solution of hydrochloric acid and heat gently to aid dissolution. Transfer to a 400 millilitres beaker and dilute to 200 millilitres with water. Bring to boil and pass a current of hydrogen sulphide through the hot solution. When the precipitate of lead sulphide drops to the bottom of the beaker, turn off the hydrogen sulphide. Pass through a fine filter paper and wash with cold water saturated with hydrogen sulphide.

Boil the filtrates and then, if necessary, reduce them by evaporation to 300 millilitres. Add to boiling mixture 10 millilitres of a 10% solution of sulphuric acid. Remove from heat and leave to stand for at least four hours.

Pass through a fine filter paper, wash with cold water. Calcine the precipitate to 1050 °C, and weigh the BaSO4.

1.2. Determination of ZnO

Evaporate the filtrates from the separation of BaSO4 so as to reduce their volume to 200 millilitres. Neutralise with ammonia in the presence of methyl red and add 20 millilitres of N/10 sulphuric acid. Adjust the pH to 2 (pH meter) by adding N/10 sulphuric acid or N/10 caustic soda whichever the case, and precipitate the zinc sulphide in the cold by passing a current of hydrogen sulphide. Let the precipitate settle for four hours, then collect on a fine filter paper. Wash with cold water saturated with hydrogen sulphide. Dissolve the precipitate on the filter by pouring through it 25 millilitres of a hot 10% solution of hydrochloric acid. Wash the filter with boiling water until a volume of about 150 millilitres is obtained. Neutralise with ammonia in the presence of litmus paper, then add 1-2 grammes solid urotropine to buffer the solution to about pH 5. Add a few drops of a 0·5% freshly prepared aqueous solution of xylenol orange and titrate with an N/10 solution of Complexon III until the pink changes to citron yellow.

1.3. Determination of K2O

by precipitation and weighing of potassium tetraphenylborate.

| | |
|---|---|
| *Procedure:* | 2 grammes of glass are attacked, after crushing and sieving, by<br>2 millilitres concentrated HNO3<br>**[**[X1]15 millilitres NClO4**]**<br>25 millilitres HF |

**Editorial Information**

**X1** Substituted by Council Directive No 69/493/EEC of 15 December 1969 on the approximation of the laws of the Member States relating to crystal glass (Official Journal of the European Communities, No L 326, p. 36),.

in a platinum dish on a water-bath then in a sand bath. After dense fumes of perchloric acid have been given off (continue until dry), dissolve with 20 millilitres of hot water and 2-3 millilitres concentrated HCl.

Transfer to a 200 millilitres graduated flask and adjust to volume with distilled water.

*Reagents:* 6% solution of sodium tetraphenylborate: dissolve 1·5 grammes of the reagent in 250 millilitres distilled water. Remove the light cloudiness which remains by adding 1 gramme of hydrated aluminia. Shake for five minutes and filter, taking care to re-filter the first 20 millilitres obtained.

Washing solution for the precipitate: prepare a little of the potassium salt by precipitation in a solution of about 0·1 grammes KCl to 50 millilitres N/10 HCl into which the solution of tetraphenylborate is poured while stirring, until precipitation ceases. Filter through a sinter. Wash with distilled water. Dry in a desiccator at room temperature. Then pour 20-30 milligrammes of that salt into 250 millilitres of distilled water. Stir from time to time. After thirty minutes, add 0·5-1 gramme of hydrated alumina. Stir for a few minutes. Filter.

*Method of operation:* Take an aliquot of the acid digest corresponding to about 10 milligrammes of K2O. Dilute to about 100 millilitres. Slowly add the reagent solution, about 10 millilitres per assumed 5 milligrammes of K2O, while gently stirring. Allow to stand for a maximum of

fifteen minutes then filter through a tared sintered crucible of porosity 3 or 4. Wash with washing solution. Dry for thirty minutes at 120 °C. Conversion factor 0·13143 for K2O.

1.4. Tolerances

± 0·1 in absolute value for each determination. If the analysis gives a lower value, within the tolerances, than the limits fixed (30, 24 or 10%), the average of at least three analyses must be taken. If that average is greater than or equal to 29·95, 23·95 or 9·95 respectively, the glass must be accepted in the category corresponding to 30, 24 and 10% respectively.

2. PHYSICAL DETERMINATIONS

2.1. Density

Method by hydrostatic balance to within ± 0·01. A sample of at least 20 grammes is weighed in air and weighed immersed in distilled water at 20 °C.

2.2. Refractive index

The index is measured on the refractometer to within ± 0·001.

2.3. Microhardness

Vickers hardness is to be measured according to the standard ASTM E 92-65 (Revision 1965) but using a load of 50 grammes and taking the average of 15 determinations.