

# **Glass & REACH : the CPIV dossier**

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# What is the CPIV "glass dossier" ?

- A non-official document , initiated by our European Association, CPIV to clarify and to give practical guidance to glass manufacturers
- Based on scientific study performed by the "Environment Committee" ,TC13 , International Commission on Glass
- Prepared by three independent and qualified experts
  - Prof. Helmut Greim (Germany) Chairman SCHER
  - Prof. Helmut Schaeffer (Germany) former Chairman ICG
  - Dr. Nicola Favaro (Italy), lab manager SSV
- Submitted to ECHA and National Authorities
- Publicly available on CPIV website [www.cpivglass.be](http://www.cpivglass.be)

# Definition

- Glass is a **substance of variable composition**, which for simplicity is expressed by convention in terms of oxide of the constituents' elements ( $\text{SiO}_2$ ,  $\text{Na}_2\text{O}$ ,  $\text{CaO}$ ,  $\text{B}_2\text{O}_3$ , etc).
- Glass is a non-crystalline or vitreous inorganic **macromolecular structure**, which does not contain the chemical components of the different raw materials.
- **Four main categories:**
  - soda-lime-silica glass
  - borosilicate glass
  - lead crystal glass
  - specialty glass.

# Consequence in REACH terminology

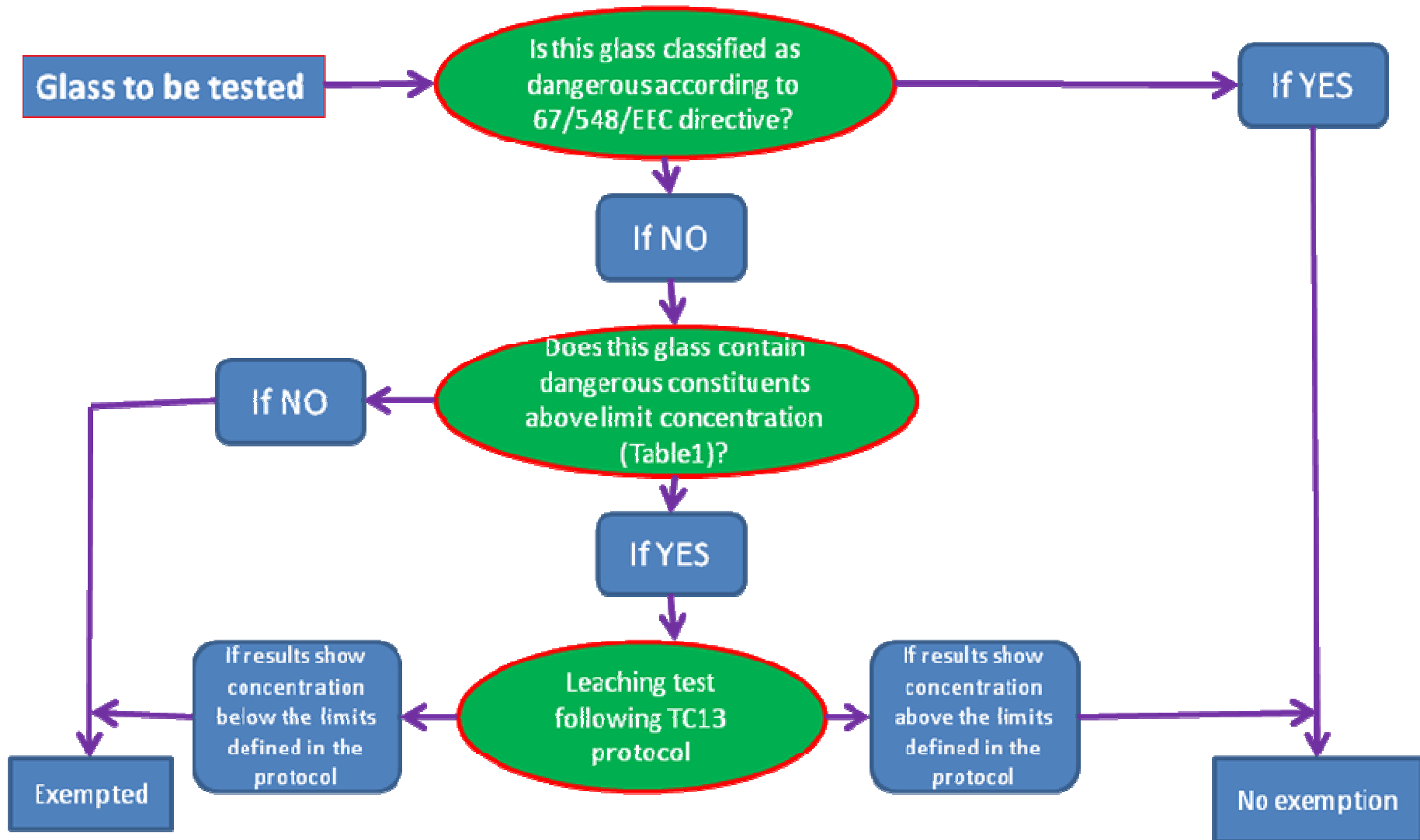
- **Glass is an UVCB substance :**
  - “ a substance of unknown or variable composition, complex reaction products or biological materials “
- **Raw materials are Intermediate :**
  - “ substances that are meant to be consumed or transformed into another substance and therefore are not intended to be present in the final manufactured substance. “

# **Glass exempted from the obligation to register , according to annex V**

*“The following substances unless they meet the criteria for classification as dangerous according to Directive 67/548/EEC and provided that they do not contain constituents meeting the criteria as dangerous in accordance with Directive 67/548/EEC present in concentrations above the lowest of the applicable concentration limits set out in Directive 1999/45/EC or concentration limit set out in Annex 1 to Directive 67/548/EEC, unless conclusive scientific experimental data show that these constituents are not available throughout the life-cycle of the substance and those data have been ascertained to be adequate and reliable : Glass, ceramic frits”.*

**It is the responsibility of the producer to prove that his glass is exempted , but the wording is complex , ....not directly applicable in practice**

# Flow chart



# In practical = 3 cases

- 1) **Not exempted** = the glass is dangerous according to Directive 67/548/EEC
- 2) **Exempted** = the glass does not contain dangerous constituents
  - Limit generally to be considered = 0.1% weight
  - Most of the soda-lime formulations is covered
- 3) **Exempted** by conclusive scientific experimental data
  - evidence of not availability of the glass constituents throughout the lifecycle of the glass
  - Need ascertained data : use of adequate methodology performed by independent and reliable data
  - Some coloured glasses, special glasses, crystal glasses,...require investigation before concluding

# “Dangerous constituents”

- Elements meeting the criteria for classification as **dangerous in all their chemical forms** according to Directive 67/548/EEC (actually CLP)

<b>Sb</b> , antimony compounds
<b>As</b> , arsenic compounds
<b>Cd</b> , cadmium compounds
<b>Cr</b> , chromium (VI) compounds
<b>Pb</b> , lead compounds
<b>Se</b> , selenium compounds

Others substances are listed as dangerous compounds in all their forms in Annex 1 of Directive 67/548/EEC (beryllium, mercury, thallium and uranium) but they are not normally present in the glass composition and for this reason they are not taken into consideration



# possible release during glass lifecycle

## 1. Release of dust in the workplace

- due to cutting, grinding, etc. especially during the preparation or secondary processing of an article inside the glass industry;
- Covered by existing regulation

## 2. Release of metals into foods, beverages, cosmetics and drugs

- due to leaching from glass container, tableware or flaconnage in the specific matrices
- Covered by specific regulation (particularly for food contact)

## 3. Release of metals into the environment

- due to leaching from windows, car glass, etc in specific environmental matrices, such as water, rain, etc.

⇒ **LEACHING TEST**

## 4. Release of metals on landfill (end of life).

- due to leaching of metal from glass after the disposal in landfill

⇒ **LEACHING TEST**

Note that , in the general case , glass is accepted in landfills without testing, but the Precautionary Principle is applied

**Others possible release have to be evaluated case by case**

# Leaching test

- **A leaching test with adequate and reliable limits =**
  - an accepted methodology to demonstrate the non-availability of the constituents
  - consistent with the position adopted by the Commission (e.g. Toys Directive),
- **Existing standards : EN 12457-2 or equivalent**
  - a "general purpose" methodology
  - Applicability to glass studied by ICG TC13
- **Existing limits : Council Decision 2003/33/EC**

# TC13 protocol

1. Apply **reduction size** procedure for the leaching test according to standard EN 12457-2 or equivalent;
2. Remove pieces less than 0.5 mm by **sieving**;
3. Put the glass sample in **contact with distilled water** (20 °C, 24 h) , using a liquid/solid ratio = 10 l/kg and agitate;
4. Remove glass sample from the resulting suspension by **filtration** (filter 0.45µm) or centrifugation;
5. Quantify the elements in the leachate by methods used for trace **analysis** in water
6. **Apply limits** given for "nonhazardous" waste in the Council Decision 2003/33/EC

# Council Decision 2003/33/EC

Element	Leaching limit (mg/kg dry )
As	2
Cd	1
Cr (total)	10
Sb	0.7
Pb	10
Se	0.5

# Conclusions

- It is the responsibility of the glass manufacturer to study it is covered by the exemption
- Data has to be obtained by labs , applying reliable and known methodologies : CPIV has proposed one , which is applicable and has been reviewed by experts
- When a glass fails , it has to be registered before the corresponding deadline, depending on the volume produced , possibly end 2010