

## 1st Questionnaire (Clarification Questionnaire) Exemption No. 7c-I (renewal request)

*Exemption for „Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound“*

### Acronyms and Definitions

PTC	Positive Temperature Coefficient, materials increasing their electrical resistance with increasing temperature; as PTC ceramics used in PTC resistors or PTC thermistors
PZT ceramics	Ceramics consisting of a mixture of $\text{PbZrO}_3$ and $\text{PbTiO}_3$

### Background

The Oeko-Institut and Fraunhofer IZM have been appointed within a framework contract<sup>1</sup> for the evaluation of applications for the renewal of exemptions currently listed in Annexes III of the new RoHS Directive 2011/65/EU (RoHS 2) by the European Commission.<sup>1</sup>

The Schott AG submitted a request for the renewal of the above mentioned exemption, which has been subject to a first evaluation. The information you have referred has been reviewed and as a result we have identified that there is some information missing and have formulated a few questions to clarify some aspects concerning your request before we can start the online consultation.

Please answer the below questions until 13 August 2015 latest or otherwise let us know until when you can provide the requested information.

### Questions

- 1) In the 2008/2009 review<sup>2</sup> of the Annex to Directive 2002/95/EC (predecessor of today's RoHS Directive 2011/65/EU), the following applications were identified for ceramics and glass containing lead:
  - i. PZT ceramics
  - ii. Dielectric ceramics
  - iii. PTC ceramics
  - iv. Thickfilm technology

<sup>1</sup> Contract is implemented through Framework Contract No. ENV.C.2/FRA/2011/0020 led by Eunomia

<sup>2</sup> Gensch et al. 2009

Please relate your application to one of the above listed application fields, or, and only then, add another application field if this is not possible.

⇒ Our field of application: glass-to-metal sealing process for the hermetic packaging of electronic devices

2) You describe tests of lead-free solder glasses in your exemption request. Please resubmit your exemption request adding the test criteria which the tested samples have to pass.

⇒ Please see the reviewed exemption request attached (chapter 6(B), page 7).

3) You indicate the amount of lead for your application with around 150 kg.

a) Does this figure cover the lead use of Schott only, or of all manufacturers glass solders? Please provide the figures for all manufacturers.

⇒ The figure covers only the lead use of Schott for this application.

⇒ We do not have any figures of other manufacturers.

b) Can you give an estimate for the worldwide use of lead in this application?

⇒ Approximately not more than 500 kg

4) You mention the use of metal solders with metalized windows as a potential lead-free alternative.

a) Which solders would be used for this?

⇒ AuSn 80/20 solder. We can only use solders with a melting temperature > 260°C.

b) You say that this solution is not applicable to all products. For which products is it applicable?

⇒ This solution is only applicable to window caps. Moreover, these products will not fit to our customers' requirements because they have to accept that the counterpart is gold plated.

5) Are there any other technologies besides the use of glass or metal solders?

⇒ Not known to us

**Please note that answers to these questions are to be published as part of the available information relevant for the stakeholder consultation to be carried out in the course of the evaluation of this request. If your answers contain confidential information, please provide a version that can be made public along with a confidential version, in which proprietary information is clearly marked. Please take into account that any recommendation on the continuation or revocation of exemption can be based on publicly available information only.**

## References

(Carl-Otto Gensch, Öko-Institut e. V., et al. 19 February 2009) *Adaptation to scientific and technical progress under Directive 2002/95/EC: Final Report*. With the assistance of Stéphanie Zangl, Rita Groß, Anna Weber, Öko-Institut e. V. and Otmar Deubzer, Fraunhofer IZM. Freiburg: . Accessed July 14, 2015.

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