

## **Adaptation to Scientific and Technical Progress under Directive 2002/95/EC – Evaluation of New Requests for Exemptions and/or Review of Existing Exemptions**

Final report

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The following documents are stakeholder documents submitted in the previous 6th and 7th stakeholder consultation rounds:

|                       |  |
|-----------------------|--|
| ERA Laboratory 2007   | Stakeholder document submitted by Silonex (Testing laboratory by ERA) in 2007.   |
| RWTT Laboratory 2006a | Stakeholder document submitted by Macron Electronics (Testing laboratory by RoHS and WEEE Test Technology – RWTT) in 2006. |
| RWTT Laboratory 2006b | Stakeholder document submitted by Macron Electronics (Testing laboratory by RoHS and WEEE Test Technology – RWTT) in 2006. |

## 5 Exemption Request No. 2 “Lead in PZT Based Dielectric Ceramic Materials for Capacitors Being Part of Integrated Circuits or Discrete Semiconductors”

The applicant ESIA / RAMTRON requests an amendment of exemption 7c as it was recommended during the previous RoHS Annex review.

### 5.1 Background

Exemption 7c was reviewed during the last adaptation of the Annex to the scientific and technical progress in 2008/2009. The consultants recommended rewording and restricting the exemption (Gensch et al. 2009). In its draft proposal for the new Annex, the Commission has adopted this recommendation with the following wording (European Commission 2009):

- 7(c)-I** 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
- 7(c)-II** Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher
- 7(c)-III** Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC until 1 January 2013, and after that date may be used in spare parts for EEE placed on the market before 1 January 2013.

In case the above wording is published in the Official Journal (expected for beginning of September 2010), lead hence could no longer be used in dielectric ceramic materials of low voltage capacitors after 31 December 2012.

Exemption 10 in Annex II of the ELV Directive exempted the use of lead in ceramics and glass as well. The background of this exemption technically is the same as exemption 7c in

the RoHS Directive. Exemption 10 of the ELV Directive was reviewed in 2009/2010 and it was recommended to restrict the use of lead in dielectric ceramic materials of capacitors following the example in the RoHS Directive (Zangl et al. 2010).

During the review of exemption 10 ELV Directive, stakeholders informed the consultants that ceramic capacitors being part of integrated circuits or discrete semiconductors use dielectric ceramic materials based on PZT ceramics. These ceramics require the use of lead. As these capacitors are conceived for rated voltages of less than 125 V DC or 250 V AC, the use of lead in these components would no longer be allowed after December 2012.

The stakeholders claimed that the PZT ceramics cannot be replaced in these capacitors and that the use of lead in these integrated capacitors hence is indispensable at the current state of science and technology. Based on the available information and in the absence of contrary information, the contractors recommended granting an exemption in the ELV Directive with the following wording as exemption 10 (a) (iv) (Zangl et al. 2010):

*“Lead in PZT based dielectric ceramic materials of capacitors being part of integrated circuits or discrete semiconductors.”*

The stakeholders submitted an identical exemption request during this review process (DIGITALEUROPE 2010; ESIA et al. 2010). The submitted information supports the facts and findings of the review of Annex II of the ELV Directive finalised in July 2010 (Zangl et al. 2010). The reviewers hence recommend granting the exemption with the identical wording recommended for Annex II of the ELV Directive:

*“Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors.”*

## 5.2 Recommendation

In view of aligning the exemption wordings of the ELV and the RoHS Directive and following the argumentation line taken in the review process of exemption 10 ELV Directive, as well as based on the available information, the use of lead in integrated capacitors with PZT based dielectric ceramics is unavoidable. In accordance with Article 5(1) (b), it is therefore recommended to grant an additional exemption under exemption 7c in the Annex of the RoHS Directive with the following wording:

*“Lead in PZT based dielectric ceramic materials of capacitors being part of integrated circuits or discrete semiconductors.”*

### 5.3 References

- DIGITALEUROPE 2010 Stakeholder document submitted by DIGITALEUROPE on 16 June 2010 within the consultation;  
[http://circa.europa.eu/Public/irc/env/rohs\\_2010\\_review/library?l=/consultation\\_request/stakeholder\\_input&vm=detailed&sb=Title](http://circa.europa.eu/Public/irc/env/rohs_2010_review/library?l=/consultation_request/stakeholder_input&vm=detailed&sb=Title)
- ESIA et al. 2010 Stakeholder document submitted by ESIA, Ramtron and ZVEI on 18 June 2010 within the consultation;  
[http://circa.europa.eu/Public/irc/env/rohs\\_2010\\_review/library?l=/consultation\\_request/stakeholder\\_input&vm=detailed&sb=Title](http://circa.europa.eu/Public/irc/env/rohs_2010_review/library?l=/consultation_request/stakeholder_input&vm=detailed&sb=Title)
- European Commission 2009 Draft Commission Decision amending, for the purposes of adapting to scientific and technical progress, the Annex to Directive 2002/95/EC of the European Parliament and of the Council as regards exemptions for applications containing lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers.; Brussels, 11 November 2009.
- Gensch et al. 2009 Gensch, C.; Zangl, S.; Groß, R.; Weber, A. K.; Deubzer, O.; Adaptation to scientific and technical progress under Directive 2002/95/EC; final report, Öko-Institut e. V. und Fraunhofer IZM, 20 February 2009;  
[http://ec.europa.eu/environment/waste/weee/pdf/report\\_2009.pdf](http://ec.europa.eu/environment/waste/weee/pdf/report_2009.pdf); last accessed 6 August 2010.
- Zangl et al. 2010 Zangl, S.; Hendel, M.; Blepp, M.; Liu, R.; Gensch, C.; Deubzer, O. Adaptation to scientific and technical process of Annex II to Directive 2000/53/EC (ELV) and of the Annex to Directive 2002/95/EC (RoHS); final report, Öko-Institut e. V. und Fraunhofer IZM, 21 June 2010;  
[http://circa.europa.eu/Public/irc/env/elv\\_4/library?l=/reports/final\\_rohs\\_2010pdf/EN\\_1.0\\_&a=d](http://circa.europa.eu/Public/irc/env/elv_4/library?l=/reports/final_rohs_2010pdf/EN_1.0_&a=d); last accessed 6 August 2010.

## 6 Exemption Request No. 3 “Cadmium as a Pigment for Use in Vitreous Enamel”

### 6.1 Description of Requested Exemption

The applicant, “The Institute of Vitreous Enamellers” (IVE), asks for an exemption for “Cadmium as a pigment for the use in vitreous enamels” (IVE 2010).

Vitreous enamel or porcelain enamels (USA) are based on borosilicate glass that is fused to metal substrates at 800°C. The applicant describes that the vitreous enamels are used as coatings on cast iron and sheet steel for the fronts, doors and utensils of domestic appliances. Enamels are the best surfaces for cooking products, as these have specific