

## Questionnaire

### Review of Exemption 30 in the Annex of Directive 2002/95/EC

#### **“Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more”**

Following Article 5 (1) (b) of the RoHS Directive, exemptions have to be reviewed at least every four years. Exemption 30 is therefore now open to review with a view to adapt it to scientific and technical progress.

#### **Background**

JBL 2006 had applied for this exemption in 2006, and Gensch et al. 2006 had recommended to grant the exemption, but put an expiry date at June 2010. The Commission granted the exemption in January 2008 without an expiry date with the following wording:

*“Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more”.*

#### **The applicant justified the exemption request with the following main arguments (Gensch et al. 2006):**

1. The applicant uses a specific multi-coil transducer design that enables manufacturing transducers of just around one third of the weight and smaller in size than conventional transducers. This facilitates reductions in size and weight of the entire loudspeakers so that for example an 18 inch woofer of conventional design weighs 35 lbs (15.9 kg), its dual coil equivalent only 10.5 lbs (4.8 kg).
2. The applicant stated that the dual coil design reduces the distortion, which in conventional designs can only, if at all, be achieved with additional measures.
3. The dual core design requires the use of a solder containing 73 % of cadmium. The solder has to cope with the following requirements:
  - a. withstand high operating temperatures close to 250 °C
  - b. withstand accelerations of several G at this operating temperature (G = gravitational acceleration).
  - c. enable soldering thin aluminium wires, which the applicant uses in most of his windings.

For further details, please refer to Gensch et al. (2006).

In case you wish to either support the continuation or the withdrawal of the current exemption 30, please answer the questions in the next section. We also welcome any additional information illustrating the use and possible substitution of the hazardous substance in this application.

## Questions

The following questions refer to high-powered loudspeakers with sound pressure levels of 100 dB(A) and more:

1. Are there alternative technologies to multicore transducers allowing the production of light weight, low distortion loudspeakers, which do not require the use of solders containing cadmium?
2. Are there alternative designs of multicore voice coils to avoid the use of solders containing cadmium by, or by a combination of
  - a. placing the solder joints at a location with lower operating temperatures, or otherwise reducing the operating temperature?
  - b. using alternatives to thin aluminium wires, for instance other materials, clad wires, thicker wires, any others?
  - c. changing the design in order to reduce the acceleration and other types of stress on the solder joint, or on the thin wire respectively?
  - d. any other means?
3. Are there alternative solders that can replace the cadmium-containing solders in the multicore transducer technology?
4. Are there any other possibilities to manufacture loudspeakers of comparable features and performance without using cadmium in solders?

The applicant and stakeholders are invited to clarify the above questions as detailed as possible and to support their statement with scientific and technical evidence (e.g. test reports). In your contribution, please state which question number you are referring to. Before you answer the questions, please check the previous online consultation (JBL 2006) and the corresponding review report (Gensch et al. 2006).

If you submit documents in PDF or other formats, please make sure it is possible to copy text and pictures from the document.

## Legal background information for stakeholders:

According to Article 5 (1) (b) RoHS Directive, exemptions can only be granted or continued if at least one of the following conditions applies:

- Substitution of concerned hazardous substances via materials and components not containing these is technically or scientifically either practicable or impracticable;
- Elimination or substitution of concerned hazardous substances via design changes is technically or scientifically either practicable or impracticable.
- The negative environmental, health and/or consumer safety impacts caused by substitution are likely to outweigh the environmental, health and/or consumer safety benefits thereof.

## References

- JBL 2006 Stakeholder document submitted by JBL Professional within the online stakeholder consultation on Adaptation to scientific and technical progress under Directive 2002/95/EC for the purpose of a possible amendment of the annex,  
[http://circa.europa.eu/Public/irc/env/dir\\_2002\\_95/library?!=/requests\\_exemptions/electrical\\_transducers&vm=detailed&sb=Title](http://circa.europa.eu/Public/irc/env/dir_2002_95/library?!=/requests_exemptions/electrical_transducers&vm=detailed&sb=Title); last accessed 18 August 2010.
- Gensch et al. 2006 Gensch, C.; Zangl, S.; Möller, M.; Lohse, J.; Müller, J.; Schischke, K.; Deubzer, O. Adaptation to Scientific and Technical Progress under Directive 2002/95/EC, Final Report, Freiburg, July 2006, page 117 ff;  
[http://ec.europa.eu/environment/waste/weee/pdf/rohs\\_report.pdf](http://ec.europa.eu/environment/waste/weee/pdf/rohs_report.pdf); last accessed 18 August 2010.