

## Consultation Questionnaire Exemption Request No. 2014-2

### ***Exemption for „Lead in solders used to make electrical connections to temperature measurement sensors designed to be used periodically at temperatures below - 150 °C“***

#### **Background**

The Oeko-Institut and Fraunhofer IZM have been appointed within a framework contract<sup>1</sup> for the evaluation of an application for granting an exemption to be included in or deleted from Annexes III and IV of the new RoHS Directive 2011/65/EU (RoHS 2) by the European Commission.<sup>1</sup>

Lake Shore Cryotronics has applied for the above mentioned exemption to be added to Annex IV of the RoHS Directive, which has been subject to a first completeness and plausibility check. The applicant has been requested to answer additional questions and to provide additional information, available on the request webpage of the stakeholder consultation (<http://rohs.exemptions.oeko.info/index.php?id=218>).

The exemption request is based on the following main properties of tin-lead alloys compared to alternative materials, and combinations and consequences thereof:

- Inhibition of tin-pest
- Ductility of tin-lead solders at low temperatures
- Low electrical resistivity within the temperature range
- Higher resistance to oxidation and corrosion in the intended operating environment
- Higher resistance to tin whisker formation on electroplated tin coatings
- Higher resistance to thermal fatigue
- Solderability on non-magnetic, nickel-free terminals
- Resistance to vibration
- Reduced intermetallic layers, better aging behaviour

The applicant agrees that some of the above aspects are already covered by RoHS exemptions:

- Exemption 26 in RoHS Annex IV:  
*Lead in*
  - *solders on printed circuit boards,*
  - *termination coatings of electrical and electronic components and coatings of printed circuit boards,*
  - *solders for connecting wires and cables,*
  - *solders connecting transducers and sensors,**that are used durably at a temperature below – 20 °C under normal operating and storage conditions.*

---

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

- Exemption 27 in RoHS Annex IV:

*Lead in*

- *solders,*
- *termination coatings of electrical and electronic components and printed circuit boards,*
- *connections of electrical wires, shields and enclosed connectors,*

*which are used in*

- (a) magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, including patient monitors designed to be used within this sphere, or*
- (b) magnetic fields within 1 m distance from the external surfaces of cyclotron magnets, magnets for beam transport and beam direction control applied for particle therapy.*

The applicant's main argument for the new exemption is that its temperature sensors are not used "durably" at temperatures below – 20 °C under normal operating and storage conditions, as required in exemption 26. They are designed to measure temperatures ranging from close to (–273 °C) up to room temperature and higher. Exemption 27 is restricted to uses in or close to specific magnetic fields and in magnetic resonance imaging equipment, which does not cover the full range of applications of the applicant's sensors.

For details, please check the applicant's exemption request at:

[http://rohs.exemptions.oeko.info/fileadmin/user\\_upload/RoHS\\_Pack\\_6/2014-2/Lake\\_Shore\\_Submission.pdf](http://rohs.exemptions.oeko.info/fileadmin/user_upload/RoHS_Pack_6/2014-2/Lake_Shore_Submission.pdf)

The objective of this consultation and the review process is to collect and to evaluate information and evidence according to the criteria listed in Art. 5 (1) (a) of Directive 2011/65/EU (RoHS II), which can be found under:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011L0065:EN:NOT>.

If you would like to contribute to the stakeholder consultation, please answer the following questions:

## Questions

1. Do you share the applicant's arguments, or are you opposed to the requested exemption? Please explain your answer in detail, in particular if you oppose the requested exemption. Please also explain if you have additional arguments to support the request.
2. There are other manufacturers of such sensors, e.g.
  - Scientific Instruments (USA)
  - Adsem (USA)
  - Temati (UK)
  - Aivon Oy (Finland)
  - MicroSensor (Ukraine)

It is yet to be established if some or all of these other manufacturers support the exemption request. Please provide information as to how these manufacturers solve the issues on which the applicant bases its exemption request, or alternatively to clarify why only the applicant should need this exemption for its sensors?

3. Do you agree with the proposed exemption wording and its maximum validity of 7 years after official publication? If not, please provide an alternative wording.
  
4. Are there any other aspects you deem to be of importance for the requested exemption?

**In case parts of your contribution are confidential, please clearly mark relevant text excerpts or provide your contribution in two versions (public /confidential).**

**Finally, please do not forget to provide your contact details (Name, Organisation, e-mail and phone number) so that Oeko-Institut/Fraunhofer IZM can contact you in case there are questions concerning your contribution.**