

Questionnaire Exemption Request No. 13

“Lead and cadmium in metallic bonds creating superconducting magnetic circuits”

Background

Test & Measurement Coalition (TMC) applies for an exemption for “Lead and cadmium in metallic bonds creating superconducting magnetic circuits”.

A very similar exemption was reviewed in 2008 resulting in its inclusion into Annex III of RoHS II (exemption 12): “Lead and cadmium in metallic bonds creating superconducting magnetic circuits”. However, it is only valid for spare parts in EEE put into the market before 24 September 2010.

The relevant excerpt of the final report is available on the project website at <http://rohs.exemptions.oeko.info/index.php?id=119>.

Category 9 equipment will be included into the scope of the RoHS Directive starting on 22 July 2014 and 22 July 2017 respectively for industrial monitoring and control instruments. If the requested exemption were to be adopted, it would be included into Annex IV of RoHS II and expire on 22 July 2021¹, unless an earlier expiry date is set.

The applicant puts forward the following main arguments:

- a. Electrical connections are made to the coils using low temperature melting alloys which are also superconductors at 4K. The alloy of choice contains 25% lead and 12.5% cadmium and remains superconducting in the very strong magnetic field of the superconducting coil.
- b. The same applies to MRI (magnetic resonance imaging) is NMR (nuclear magnetic resonance) as an additional application. MRI is actually a branch of NMR used specifically for imaging. The technology is essentially the same as the core item is a superconducting magnet. The main difference is that MRI magnets are horizontally mounted whereas NMR products such as FT mass spectrometers in category 9 are normally mounted vertically.

¹ Due to a standard 7 year validity period for category 9 exemptions as stated in Article 5 (2) of Directive 2011/65/EU

For details, please check the applicant's exemption request at <http://rohs.exemptions.oeko.info/index.php?id=119>. This exemption request has been subject to a first completeness and plausibility check. The applicant has been requested to answer additional questions and to provide additional information (c.f. link above).

In the document "[General comments to Oeko's questions.docx](#)", TMC justifies the exemption request with formal and procedural arguments. Such formal and procedural arguments cannot be taken into account during the evaluation by Öko-Institut and Fraunhofer IZM. Rather, 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 you can download from here:

<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. The wording suggested by the applicant for this new exemption would be "**Lead and cadmium in metallic bonds creating superconducting magnetic circuits**".

- a. Do you agree with the scope of the exemption as proposed by the applicant? Please suggest an alternative wording and explain your proposal, if you do not agree with the proposed exemption wording.

[Yes, we agree with the scope of exemption which the applicant proposed.](#)

- b. Please state whether you either support the applicant's request or whether you would like to provide argumentation against the applicant's request. In both cases provide detailed technical argumentation / evidence in line with the criteria in **Art. 5 (1) (a)** to support your statement.

[We support the applicant's request.](#)

2. The applicant refers to the ERA study report

(http://rohs.exemptions.oeko.info/fileadmin/user_upload/reports/ERA-Reports/era_study_final_report.pdf) where in section 10.11.1 it is reported that substitutes are available (e.g. cadmium free based on PbBi or lead free alloys by using InSn) but not feasible for ensuring superconductivity of metallic bonds.

- a. Is there any supporting / contradicting evidence that you can provide? If yes, please give information on current research activities on substitutions for lead and/or cadmium in superconductors carried out by yourself and/or other sector players as well as please refer to relevant studies.

[No, we do not have any other supporting / contradicting evidence.](#)

Exemption request evaluation under Directive 2011/65/EU

b. Is there a timeline for the next ten years for possible substitutes? (It is clear that you cannot give perfect forecast for the technical and market developments for the next ten years. Nevertheless, a sound and justified outlook could help in the evaluation).

We continue to survey other materials having similar properties. Hopefully within ten years, such materials shall be found.

3 The applicant proposes a maximum validity until 2021 for the exemption. Do you agree with this expiry date, or would an earlier expiry be feasible against the background of upcoming lead and/or cadmium free solutions?

For development target, we think 2021 is reasonable.

4 Do you have further comments on this exemption request, which have not yet been taken into account

None.

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

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