

Consultation Questionnaire Exemption Request No. 2019-3

Exemption for „Lead in bismuth lead strontium calcium copper oxide superconductor cables and wires and lead in electrical connections to these wires“

Abbreviations and Definitions

BSCCO	Bismuth Strontium Calcium Copper Oxide
MRI	Magnetic Resonance Imaging
NMR	Nuclear Magnetic Resonance
Sumitomo	Sumitomo Electric Industries, Ltd.
T	Tesla

Background

The Oeko-Institut and Fraunhofer IZM have been appointed by the European Commission, within a framework contract¹, for the evaluation of applications for exemption from Directive 2011/65/EU (RoHS 2), to be listed in Annexes III and IV of the Directive.

Sumitomo has submitted a request for the above mentioned exemption, 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=343>).

According to the applicant, superconductors with high critical temperatures have many technical advantages over the niobium-alloy low temperature superconductors that are currently used in NMR spectrometers and MRI scanners. Research has shown that the material that gives the best overall performance and reliability is **lead-doped** Bismuth Strontium Calcium Copper Oxide (BSCCO). Powerful superconducting electromagnets have been constructed using lead-doped BSCCO and used for NMR and other applications. The use of lead-doped BSCCO allows the generation of more powerful and more stable magnetic fields than using other copper oxide superconductors, and these magnets have also been found to be more reliable than those made with other materials. Electrical connections are made to the superconducting wires using eutectic **lead-tin solder** because this has proven to be reliable and has low electrical resistivity at low temperatures. NMR spectrometers and other products that use lead-doped BSCCO cannot be sold in the EU until this exemption is granted.

Sumitomo has requested the maximum seven years validity period for the exemption.

¹ The contract is implemented through Framework Contract No. FWC ENV.A.2/FRA/2015/0008 of 27/03/2015, led by Oeko-Institut e.V.

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

<http://rohs.exemptions.oeko.info/index.php?id=343>

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 2), 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. The applicant has requested an exemption, proposing the following wording:
"Lead in bismuth lead strontium calcium copper oxide superconductor cables and wires and lead in electrical connections to these wires" for the maximum validity period of 7 years.
 - a. Do you agree with the scope of the exemption as proposed by the applicant?
 - b. Please suggest an alternative wording and explain your proposal, if you do not agree with the proposed exemption wording.
 - c. Please explain why you either support the applicant's request or object to it. To support your views, please provide detailed technical argumentation / evidence in line with the criteria in Art. 5(1)(a) to support your statement.
2. Please provide information concerning possible substitutes or developments that may enable reduction, substitution or elimination, at present or in the future, of lead in superconductors with similar performance like the ones in the scope of the exemption request, and/or for soldering to such superconductors:
 - a. In this regard, please provide information as to RoHS-compliant alternatives that may cover part or all of the applicability range of the requested exemption;
 - b. Please provide quantitative data as to application specifications to support your view.
3. Please provide information concerning possible substitutes or elimination possibilities at present or in the future:
 - a. Please explain substitution and elimination possibilities and for which part of the applications in the scope of the requested exemption they are relevant.
 - b. Please provide information on research to find lead-free alternatives (substitution or elimination) that may cover part or all of the applications in the scope of the exemption request.
 - c. Please provide a roadmap of such on-going substitution/elimination and research (phases that are to be carried out), detailing the current status as well as the estimated time needed for further stages.

4. Do you know of other manufacturers producing superconducting coils with comparable features and performance which do not depend on using lead or other substances that are regulated under the RoHS Directive?
5. If you are a user of MRI or NMR devices, please give us your opinion on the advantages of the lead-doped BSCCO-material and the coils which Sumitomo describes and claims in the exemption request.
 - a. Would they offer a real advantage over the already available technologies for higher magnetic field strengths?
 - b. How do you think of the advantages for lower magnetic field strengths which can already be achieved with technologies that are already available on the EU market?
 - c. Do you estimate the size and energy consumption advantages which Sumitomo claims to be plausible, crucial and significant for your use of such technologies?
 - d. Do you see cost advantages for you/your activities if you use the technology in the scope of the requested exemption?
6. As part of the evaluation, socio-economic impacts shall also be compiled and evaluated. For this purpose, please provide details in respect of the following:
 - a. What are the volumes of EEE in the scope of the requested exemption which are placed on the market per year?
 - b. What are the volumes of additional waste to be generated should exemption not be granted or be granted for less than 7 years?
 - c. What are estimated impacts on employment in total, in the EU and outside the EU, should the exemption not be granted or be granted for less than 7 years? Please detail the main sectors in which possible impacts are expected – manufacturers of equipment in the scope of the exemption, e.g. producers of MRI devices, manufacturers in the supply chain, retail, etc.
 - d. Please estimate additional costs or missed opportunities for cost reductions should the exemption not be granted, and how they are divided between various sectors (e.g. private, public, industry: manufacturers, suppliers, retailers, users, etc.).

In case parts of your contribution are confidential, please provide your contribution in two versions (public /confidential). Please also note, however, that requested exemptions cannot be granted based on confidential information!

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.