

Questionnaire Exemption Request No. 10

“Lead in Micro Channel Plate”

Background

The Öko-Institut together with Fraunhofer IZM has been appointed within a framework contract for the evaluation of applications for granting, renewing or revoking 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.

The Japan Business Council in Europe (JBCE) has applied for an exemption for “Lead in Micro Channel Plate”.

The applicant puts forward the following main arguments:

1. The applicant states that micro-channel plate (MCP) is an electronic component which is formed with millions of glass capillary lined up in two dimensions and working as an electron multiplier. The glass capillaries are composed mainly of SiO₂ and PbO which grants conducting characteristics to the glass, along with some other materials added in much smaller proportions for the purpose of acquiring other characteristics.
2. The applicant explains that the capillaries are produced by softening a glass tube with heat and stretching it several times into a diameter of a few to few tens of a micrometre. This is possible due to the glass’s characteristics of softness and extensibility. Adding PbO and its reduction treatment are necessary so as to afford the glass capillaries conductivity, which is essential to obtain the electron multiplication for each channel. The PbO is a chemically stable material in glass and at present no viable substitutes are known for contributing these qualities to the glass.
3. According to the applicant, a ceramic material with semiconductor processing approach has been studied as an alternative technology, but it has a limitation in its capillary (channel) size reaching down to only a few hundred micrometres, therefore the adaptability to MCP applications is not possible at present. The applicant has not mentioned other possibilities for substitution of the lead in the MCP or for substituting of the glass in MCP so as to avoid the use of lead.

A similar exemption already exists in Annex IV of 2011/65/EU as follows;

“Equipment utilising or detecting ionising radiation

3. Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate.”

However, the applicant states that the current exemption might not cover the MCPs used for equipment other than ones detecting ionizing radiation such as “mass spectrometer”, “semiconductor inspection” and “surface analysis” since they use MCP for detecting ion and/or electrons.

For details, please check the applicant’s exemption request at <http://rohs.exemptions.oeko.info/index.php?id=140>. 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).

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

Questions

1. 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 please provide detailed technical argumentation / evidence to support your statement.
2. The applicant states in the exemption request that “The micro-channel plate (MCP) is an electronics component [...]”. In this case, the use of lead would be covered by exemption 7-c-I of the RoHS Directive “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”. Please clarify why the mentioned application does not fall under the above mentioned exemption, thus requiring an exemption of its own.
3. The applicant estimates that 60 Kg of lead are used in this application worldwide. Please provide information where possible to support or refute this assumption. Please include the calculations and assumptions made to come to a certain amount and if possible quantify (or assess) the amount of lead assumed to be put on the market annually in Europe.
4. The applicant states that research concerning an alternative technology using Atomic Layer Deposition is underway in the USA; however, it is still far from being used in practical applications. Please provide information if possible concerning the research in progress and its applicability as a substitute for the application, as well as the

- respective timeframe needed for completing research and development of a marketable substitute.
5. Additionally, according to the applicant, an American company has a patent on the technique mentioned in question 4, valid till 2029 that could influence competitiveness in the market once substitution is possible, should the exemption not be granted. The applicant mentioned this information in reference with the requested duration of the exemption. Please state why or why not this information should be taken into consideration concerning the duration of an exemption, should one be granted. Should you want to use socio-economic arguments for the duration of the requested exemption, please provide detailed figures to support your argumentation?
 6. Please provide further information, where available, concerning further R&D efforts underway for developing substitutions that would avoid the use of lead in MCP. Please elaborate what development stages are further necessary and what the suitable timeframes are that need to be considered for these.
 7. Are there any other arguments being relevant in the context of the evaluation of this request for exemption which are not raised in the questions above and that are of importance?

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