

Consultation Questionnaire Exemption No. 13b (Annex III)

Exemption for „Cadmium and lead in filter glasses and glasses used for reflectance standards“

Abbreviations and Definitions

Cd	Cadmium
EEE	Electrical and electronic equipment
Pb	Lead

Background

The Oeko-Institut and Fraunhofer IZM have been appointed within a framework contract¹ 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.¹

Spectaris e.V. has submitted the above mentioned request for 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=227>).

According to the applicant, optical filter glasses are clear transparent non-crystalline materials with a variety of compositions. Cadmium and lead provide unique characteristics that allow the application of such glasses in a wide variety of applications, for which alternatives are currently not available. The function of Cd in optical glass is to absorb light at wavelengths shorter than a specified value and to allow light of a longer wavelength (i.e., below and above a “sharp cut-off” wavelength, respectively) to be transmitted through the filter. Red, orange and yellow filter glasses can be produced from Cd, which are used to absorb wavelengths from ca. 400nm, a red filter allowing only red light to pass, whereas an orange filter allows both orange and red light to pass. An important property of these filters is the sharp cut-off - Cd filters can be designed to absorb almost 100% of the light below the cut-off wavelength and to transmit better than 95% of the light above it. Similarly, lead is added to a type of green glass filter to allow transmission of specific wavelengths, independent from the viewing angle.

Spectaris e.V. details that Cd filter glasses are used in a wide variety of applications including surveillance application; traffic monitoring; environmental monitoring; colour channel separation; spectral filters in photographic cameras; bar code readers; industrial measurement applications; fluorescence microscopes; spectrometers; medical devices; etc. Lead filter glasses (green filter glass containing lead) are used for separating the different channel colours in colour televisions and in colposcopy devices. Lead containing filters are also used in gas chromatograph detectors.

For details, please check the applicant's exemption request at: <http://rohs.exemptions.oeko.info/index.php?id=227>.

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

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. The applicant has requested an exemption for “*Cadmium and lead in filter glasses and glasses used for reflectance standards*” specifying that such glasses are in use in products falling under various categories of Annex I. Should an exemption be granted it is to be added to Annex III of the RoHS Directive.
 - a. Do you agree with the scope of the exemption as proposed by the applicant?
 - b. The applicant has only provided argumentation as to why Cd and Pb should further be exempted for use in filter glasses. If you support the renewal of this exemption for glasses used for reflectance standards, please provide detailed technical argumentation / evidence in line with the criteria in Art. 5(1)(a) to support your statement.
 - c. Please suggest an alternative wording and explain your proposal, if you do not agree with the proposed exemption wording.
 - d. Please explain your support of the applicant’s request or your objection, supporting your views with detailed technical argumentation / evidence in line with the criteria in Art. 5(1)(a) to support your statement.
2. According to the applicant, where alternatives have been developed, they have been implemented to eliminate the need for using cadmium and lead in filter glasses. However, for most applications alternatives still do not exist that could allow fully replacing leaded optical lenses in the full application range.
 - a. Please provide information concerning possible substitutes or developments that may enable reduction, substitution or elimination, at present or in the future, of Cd and Pb in applications for which the exemption renewal has been requested;
 - b. In this regard, please provide information as to alternatives that may cover part or all of the applicability range of cadmium and lead in filter glasses;
 - c. Please provide quantitative data as to application specifications to support your view.
3. Spectaris explains that the important property of Cd relevant for establishing the “wavelength sharp cut-off” performance aspect for which it is used in various applications “*is based on the semiconductor electron band gap characteristic of the microcrystals formed by the cadmium compounds.*”² It can be assumed that if other elements exist that have a similar semiconductor electron band gap characteristic, that they could be considered as candidate substitutes, however Spectaris elaborate that “*This semiconductor property for its microcrystal lying in the desired energy range and even allowing adjusting*

² Spectaris (2015a), Spectaris Answers to 1st Set of Clarification Questions, submitted 11.03.2015, available on RoHS Stakeholder Consultation - Ex. Request webpage.

*the gap width and thus the absorption edge position with a temper process is absolutely unique for the cadmium chalcogenides. No other compounds have been found that perform this function.*³. If you disagree with this statement, please explain on what basis.

4. Please provide information as to research initiatives which are currently looking into the development of possible alternatives for some or all of the application range relevant for the exemption at hand.
 - a. Please explain what part of the application range is of relevance for such initiatives (in what applications may substitution be possible in the future)?
 - b. Please provide a roadmap of such on-going research (phases that are to be carried out), detailing the current status as well as the estimated time needed for further stages.

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. Please also note, however, that requested exemptions cannot be granted based on confidential information!

³ Spectaris (2015a), Spectaris Answers to 1st Set of Clarification Questions, submitted 11.03.2015, available on RoHS Stakeholder Consultation - Ex. Request webpage.