

Stakeholder contribution to the renewal Exemption No. 13b (Annex III)

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

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in the name of the Fraunhofer Group for Light & Surfaces,
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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?

Yes, we fully agree with the scope and the text of 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.

We support the renewal of this exemption to further use Cd and Pb in filter glasses. It is clearly outlined in the request that these materials are necessary to generate optical filters for multiple applications, which need to provide steep spectral edges for filtering optical data. These steep edges are needed e.g. in medicine, to ensure correct diagnoses. Other materials result in broad spectral edges, which cannot be used for the above mentioned applications. Without these filters, a lot of diagnostic methods would not be possible. We believe, no further material or arguments are necessary to underline this.

c. Please suggest an alternative wording and explain your proposal, if you do not agree with the proposed exemption wording.

No alternative wording is needed; the explanation of the proposal is fine.

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.

Photonics is indispensable – not only to our society, but also to innovations and growth in Europe. It has evolved into one of the most important key technologies and economic branches in Europe with a considerable potential for growth. European companies rank

among the world market leaders in many sub-segments of photonics and, together with the research landscape, have contributed major efforts in consolidating a powerful position on the world market and safeguarding this over the years. The world market share is even significantly higher in the sub-segments of photonics belonging to the core sectors in Europe (production technology, image processing and measurement technology, optical components and systems, and medical technology). Photonics is an enabling technology in nearly all application areas; it is used in production, security, consumer products, space applications, automotive, health, mobility, sensing, digital communication, IT, lighting and much more.

Thus, we strongly support the applicant's request!

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;

As already described in the exemption request, for most applications there exist no alternatives for Cd and Pb in filter glasses at the moment and no obvious technical solution lends itself to believe this should change shortly. It is clearly outlined in the request that these materials are necessary to generate optical filters, which need to provide steep spectral edges for filtering optical data. These steep edges are needed e.g. in medicine, to ensure correct diagnoses. Other materials result in broad spectral edges, which cannot be used for the above mentioned applications. Without these filters, a lot of diagnostics would not be possible.

There is ongoing research (since years) to find substitutes, but up to now no sufficient substitutes for filter glasses have been found. In the moment, they are absolutely indispensable.

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;

We have no further information on possible alternatives for commercial application, which could match contemporary filters in all technical aspects.

c. Please provide quantitative data as to application specifications to support your view.

We have no more quantitative data to support our view as was already mentioned in the exemption request.

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.”. 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 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.

We fully agree with this statement. The argumentation is absolutely correct.

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)?

As already mentioned before, there is ongoing research to find substitutes, but up to now no substitutes for all Cd or Pb containing optical filters have been found.

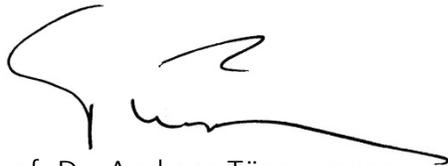
b. Please provide a roadmap of such on-going research (phases that are to be carried out), detailing the current status as well as the estimated time needed for further stages.

No stringent roadmap can be given at the moment. Replacement efforts are driven by specific application requirements and based on a large number of technological approaches. While the composition of glasses with alternative chemical compositions is a

very mature research topic, where no revolutionary breakthroughs are to be expected a large-scale effort.

Actually we see no way how Cd or Pb can be completely substituted in optical filters.

Jena, 15.06.2015



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