

## Adaption to Scientific and Technical Progress under Directive 2002/95/EC

Results previous evaluation  
Exemption 32 under Directive 2002/95/EC  
“Lead oxide in seal frit used for making  
window assemblies for Argon and Krypton  
laser tubes”

(Excerpt from Öko-Institut report 2006)

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### **6.37.3 Final recommendation**

With regard to the above mentioned arguments no founded exemption can be given at this point. An additional round of questions to the applicant and stakeholders would be necessary to give a justifiable recommendation. The time span necessary for this exceeds duration of the contract.

Should a decision be taken on the grounds of the available documentation it is recommended not to grant the exemption due to the missing information – there is no founded justification in line with Article 5 (1) (b). In this case there is not even the assumption that an additional round of questions would give enough evidence to justify an exemption. Probably only an intensive communication with the applicant would clarify what exactly is requested to be exempted and whether there is any justification available in line with Article 5 (1) (b) or maybe whether this request belongs to the category of LTB issues.

### **6.38 Lead oxide in seal frit used for making window assemblies for argon and krypton laser tubes – Coherent (request set 4 No. 21)**

#### **6.38.1 Requested exemption**

Coherent has requested an exemption for lead oxide in seal frit used for making window assemblies for argon and krypton laser tubes. Depending on the application, some of these laser tubes are already covered by existing exemptions (e.g. the use in a medical device to perform eye surgery) while the use of the laser as tool on a stand-alone basis or as a light source for scientific investigation is not explicitly exempted up to now.

Lead oxide is used as frit sealing, meaning bonding the front and rear crystalline quartz windows to crystalline quartz stems that are themselves vacuum sealed to the laser tube assembly using indium.

Typical quantity of lead per laser tube is about 10 to 20 milligram, the total amount in the applicant's annual shipment into the EU is less than 5 g (including both exempt and non-exempt applications).

The applicant suggests the following wording for the exemption:

„Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes.”

#### **6.38.2 Summary of justification for exemption**

The applicant justifies his request for exemption with technical arguments:

- Despite years of ongoing development the applicant has no feasible substitute for the use of lead oxide. Due to intractable constraints on the manufacturing process' temperature and on the properties and composition of the window bonds it is

technically and scientifically impracticable to exclude lead-containing seal frit from the manufacture of their products.

- Lead-free frit materials (e.g. bismuth- or phosphorus-based glasses) are in the exploratory stage and not developed technically or commercially to be a viable alternative for the applicant.
- Optical contacting as an alternative approach was considered. Due to the high requirements (axial alignment of the window) it was not possible to achieve better than 50 % yield (compared to 97 % yield with the current frit process).

A critical review of the documents made available by the applicant and of further data and information given by other parties lead to the following observations and conclusions:

- The applicant provided comprehensive data and information on possible substitutes and technologies.
- There are obviously similarities to the use of lead oxide in other applications requested for exemption (set 1 No. 6, set 2, No. 9 and 19, set 4 No. 15). These requests were recommended to be granted against the background that currently no viable substitutes for lead oxide as seal frit are available.

### **6.38.3 Final recommendation**

With regard to the above mentioned arguments it is recommended to grant this exemption. From the consultant's point of view the wording suggested by the applicant seems to be appropriate:

*„Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes.“*

## **6.39 Smart card readers (product: GemSelf700-MS2, GCR700-3ZS, Vodafone D2, GCR760 and GemSelf750 SV) – GEMPLUS (request set 4 No. 22)**

### **6.39.1 Requested exemption**

Gemplus S.A. (France) requests an exemption for five types of special standalone smart card readers; product commercial names being:

- GemSelf700-MS2
- GCR700-3ZS
- Vodafone D2
- GCR760
- GemSelf750 SV