

# Questionnaire 1 (Clarification) for Renewal of Exemption 4 of Annex IV (TMC)

**Table 1: Currently valid wording of the exemption**

No.	Current exemption wording	Current scope and dates of applicability
IV-4	Lead in glass frit of X-ray tubes and image intensifiers and lead in glass frit binder for assembly of gas lasers and for vacuum tubes that convert electromagnetic radiation into electrons	<p>Applies to categories 8 and 9.</p> <p>Expires on</p> <ul style="list-style-type: none"> <li>- 21 July 2021 for category 8 other than in-vitro diagnostic medical devices and for category 9 other than industrial monitoring and control instruments.</li> <li>- 21 July 2023 for category 9 in-vitro diagnostic medical devices.</li> <li>- 21 July 2024 for category 9 industrial monitoring and control instruments.</li> </ul>

## Acronyms and Definitions

Cat.	Category, referring to the categories of EEE specified in Annex I of the current RoHS Directive 2011/65/EU
COM	European Commission
DPSS	Diode pumped solid state (used in the context of lasers)
EEA	European Economic Area (EU 27 + Iceland, Liechtenstein and Norway)
EEE	Electrical and electronic equipment
EU	European Union
IMCI	Industrial monitoring and control instruments
Lead-free	Not containing lead in the applications in scope of the exemption to be reviewed
Pb	Lead

## 1. Background

Bio Innovation Service, UNITAR and Fraunhofer IZM have been appointed<sup>1</sup> by the European Commission through for the evaluation of applications for the review of requests for new exemptions and the renewal of exemptions currently listed in Annexes III and IV of the RoHS Directive 2011/65/EU.

On 20 January 2023, TMC requested the renewal of the above exemption with the below scope and applicability dates.

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<sup>1</sup> Implemented through the specific contract 070201/2020/832829/ENV.B.3 under the Framework contract ENV.B.3/FRA/2019/0017

**Table 2: Requested exemption**

No.	Requested exemption	Requested scope and dates of applicability
IV-4	Lead in glass frit of X-ray tubes and image intensifiers and lead in glass frit binder for assembly of gas lasers and for vacuum tubes that convert electromagnetic radiation into electrons	Applies to category 9 monitoring and control instruments. Expires on 21 July 2031 (2024 + 7 years)

As result of a first review we identified that some information is missing. Against this background the questions below are intended to clarify aspects concerning the request at hand.

**We ask you to kindly answer the below questions until 30 October 2023 latest.**

## 2. Questions

1. Could you please confirm that Table 2 correctly reflects the requested renewal of the exemption?

**TMC reply to question 1:**

TMC would like to reiterate that all submitted renewal applications, including the renewal application for RoHS exemption IV-4, request the renewal of the exemption for category 9 industrial monitoring and control instruments in its existing wording with the subsequent maximum renewal period of 7 years.

Table 2 therefore correctly reflects TMC's renewal request.

2. The scope and applicability of the currently valid exemption IV-4 is not specified for cat. 8 and 9. We therefore added the theoretically applicable scope and applicability.

Is exemption IV-4 required for any other EEE than cat. 9 industrial monitoring and control instruments (IMCI)?



**TMC reply to questions 2:**

TMC is not in a position to provide insights beyond applications for Industrial Monitoring and Control equipment.

3. You state that the exemption is required for the below EEE:
- *Laser Interferometers and Calibration Systems (Monolithic Laser Combiners & Precision Optics)*
  - *Application-Specific Test Systems and Components*
  - *Used Equipment in the above categories*
- a. Why do you specifically mention used equipment? The exemption would in any case remain available for used equipment that was placed on the market prior to the expiry of the exemption.

**TMC reply to questions 3 (a):**

Manufacturers in our sector produce equipment that is capable of being sold globally and is not regionalized like other market sectors. Due to the extended life and asset value of equipment, it is frequently procured back from customers when they no longer have a continued need for that application. The equipment is then refurbished and made available as used. Such equipment may not have been sourced from within the EU. Consequently, the continued application of the existing exemption definition is important to allow such equipment to meet the RoHS compliance obligations if it is to be capable of being placed on the EU market. If the exemption definition changes, used equipment from outside the EU would no longer be available for purchase in the EU.

- b. Are the above the only types of products for which the exemption is required?

**TMC reply to questions 3 (b):**

The equipment listed above is complete with respect to Industrial Monitoring and Control Equipment. However, the product type “Application-Specific Test Systems and Components” is very broad and

deep and covers customer's end-use applications where nano-precision positioning is necessary for the functioning of their equipment. Additional details are provided in Section 2.2 of the submitted SEA.

- c. The exemption wording mentions several (parts of) equipment, i.e. X-ray tubes, image intensifiers, gas lasers and vacuum tubes converting electromagnetic radiation into electrons. Could you please describe these types of EEE in more detail?

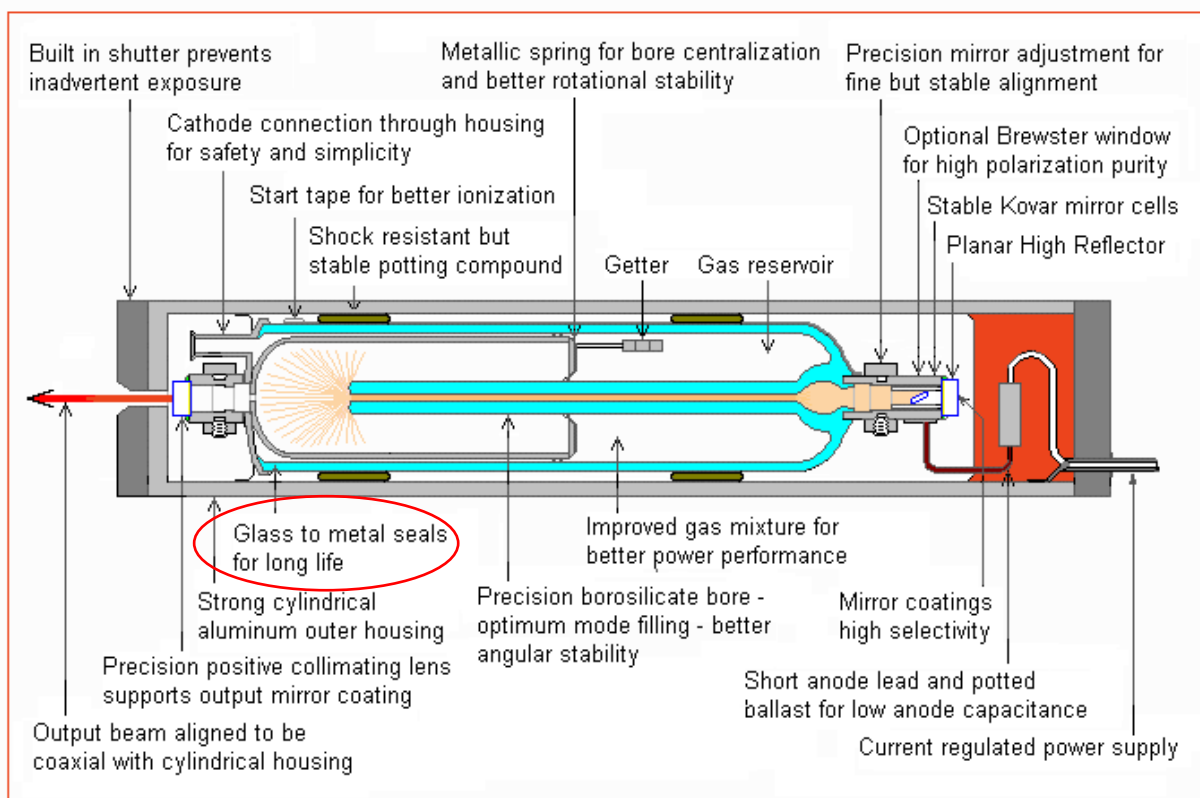
**TMC reply to questions 3 (c):**

Other applications will have a lack of alternatives to the use of lead due to the physics of the glass-to-metal connection. However, TMC members do not know specifics beyond our application in gas lasers.

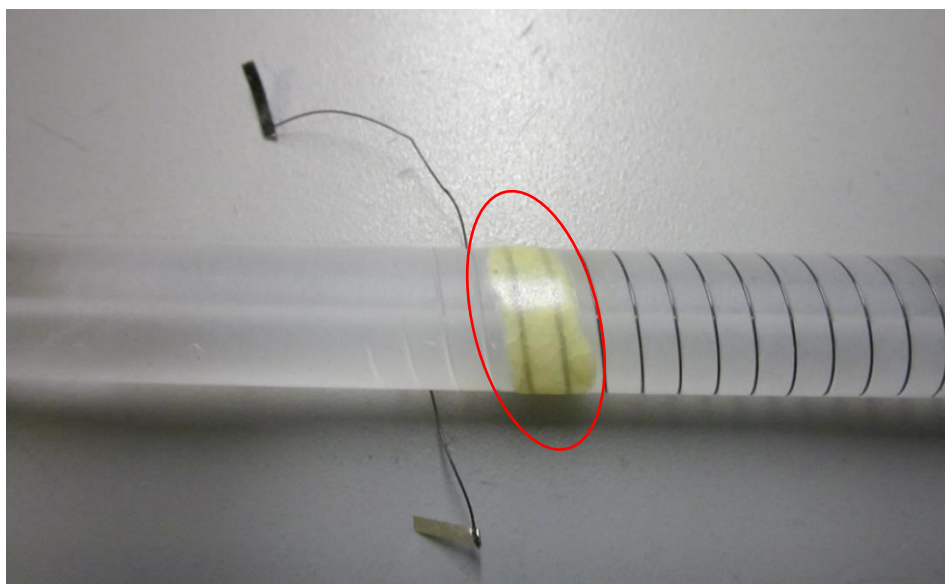
4. The figure on page 10 of your renewal request illustrates the cross section of a plasma tube. Could you please provide this figure with an indication of the lead use in the scope of exemption IV-4?

**TMC reply to questions 4:**

Please see the marked up images below.



**Cross Sectional View of a Melles Griot HeNe Laser Head Showing Details of the Plasma Tube**



5. You describe that there are no substitutes for the use of lead in scope of exemption IV-4, and you do not mention alternative technologies to eliminate the use of lead.
  - a. Could diode pumped solid state lasers, for example, replace the lasers whose manufacturing requires lead?

**TMC reply to questions 5(a):**

No. Alternative technologies, such as diode pumped solid state lasers, do not have the specifications necessary to perform these applications. The precision, power and quality of the beam, for instance as is necessary for manufacturing of semiconductors, is only achievable with temperature-stabilized gas lasers. As technologies advance in industries such as semiconductors, the specifications required for lasers will get more demanding, not less.

- b. X-ray tubes are commonly used in medical devices as well. Manufacturers of such equipment did, however, not request the renewal of the exemption which thus expired in 2021/2023 for cat. 8 medical devices. How are the X-ray tubes used in cat. 9 IMCIs different from those used in medical devices?

**TMC reply to questions 5(b):**

Other applications with similar specification requirements will have a lack of alternatives to the use of lead due to the physics of the glass-to-metal connection. However, TMC members do not know specifics beyond our application in gas lasers.

6. Are the “image intensifiers” in the wording of exemption IV-4 microchannel plates or capillary plates (MCPs)? If not, please explain how they are different from MCPs or capillary plates.

**TMC reply to questions 6:**

Other applications will have a lack of alternatives to the use of lead due to the physics of the glass-to-metal connection. However, TMC members do not know specifics beyond our application in gas lasers.

7. TMC is the only applicant requesting this exemption.



- a. Are TMC members the only producers and/or users of the types of EEE that require exemption IV-4 which you mention in your renewal request?

**TMC reply to questions 7(a):**

TMC is not able to provide insights beyond applications for Industrial Monitoring and Control equipment.

- b. If not, which companies produce/use such types of EEE as well?

**TMC reply to questions 7(b):**

TMC is not in a position to provide insights beyond applications for Industrial Monitoring and Control equipment.

8. Would the current exemption 7(c)(I) and one of the subclauses of the recommended renewed exemption 7(d)(V) cover the various uses of lead in the scope of the current exemption IV-4?

**TMC reply to questions 8:**

Given the exclusive nature of Annex IV exemptions to Category 8 and 9 equipment, exemption AIV-4 was necessary for these applications when the RoHS Directive was recast in 2011. Given the likelihood of more frequent changes to Annex III exemptions, particularly in the narrowing of scope and/or limited durations, it would not be appropriate to attempt to align with the AIII 7(c)-I or 7(c)-V as recommended from the Pack 22 exemption review.

**Please note that answers to these questions will be published as part of the evaluation of this exemption request. If your answers contain confidential**

**information, please provide a version that can be made public along with a confidential version in which proprietary information is clearly marked.**

**We ask you to kindly provide the information in formats that allow copying text, figures and tables so that they can be included into the review report.**