

Questionnaire 1 (Clarification) for Exemption III-44 (EUROMOT)

Current wording of exemption 44

Table 1: Currently valid exemption wordings

No.	Exemption	Scope and dates of applicability
III-44	Lead in solder of sensors, actuators, and engine control units of combustion engines within the scope of Regulation (EU) 2016/1628 of the European Parliament and of the Council ⁽¹⁾ , installed in equipment used at fixed positions while in operation which is designed for professionals, but also used by non-professional users	Applies to category 11 and expires on 21 July 2024.

Acronyms and Definitions

Cat.	Category, referring to the categories of EEE specified in Annex I of the current RoHS Directive
COM	European Commission
EEE	Electrical and electronic equipment
ECU	Engine control unit

1. Background

Bio Innovation Service, UNITAR and Fraunhofer IZM have been appointed² 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.

EUROMOT submitted a request for renewal of the above exemption for cat. 11 with the wording, scope and validity period shown in the below table:

¹ Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC (OJ L 252, 16.9.2016, p. 53).

² 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 renewal

No.	Requested exemption	Requested scope and dates of applicability
III-44	Lead in solder of engine control units of combustion engines, installed in equipment used at fixed positions while in operation which is designed for professionals, but also used by non-professional users	Applies to category 11; expires on 21 January 2027.

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

We ask you to kindly answer the below questions until 3 November 2023 latest.

2. Questions

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

The proposed exemption renewal as outlined in Table 2 correctly reflects the requested renewal of the exemption.

2. You proposed a new exemption phrasing, which omits the references to Regulation (EU) 2016/1628 that is explicitly mentioned in the currently valid exemption wording. Please explain your rationale for this choice and provide additional information clarifying the difference this would make regarding the equipment in scope of exemption 44.

The proposed new wording reflects EUROMOT applications. EUROMOT members have investigated their use of Exemption 44 and recognized the need for continued exemption for engine control units only, therefore the terms sensors and actuators have been suggested for removal from the wording.

With regards to the omission of the direct reference to Regulation (EU) 2016/1628, the regulation refers to internal combustion engines for non-road mobile machinery. This category of machinery is already excluded from the scope of the Directive and therefore it is deemed that the direct reference to the Regulation can create misunderstanding in the interpretation of the exemption. The removal of the explicit reference to 2016/1628 would not change the equipment in scope of exemption 44 but aid in the clarity of understanding of the types of products in scope of the exemption.



3. In section 4(5) of the exemption request form, you state that the amount of lead entering the EU market annually through applications for which the exemption is requested is estimated to be 1.66 kg, based on a worst case estimate of 13.88 mg of lead per ECU and an estimated 119,680 units placed on the EU market annually. This is in stark contrast to EUROMOT's initial 2017 request for this exemption, in which it was estimated that ECUs contained an average of 35 g of lead in solder, leading to an estimate of more than 2 tonnes of lead contained in the ECUs. Please clarify how this difference can be explained and provide any additional information that is helpful to make the estimate plausible.

Based on information provided by EUROMOT members collated during the writing of the exemption renewal request on the amount of lead in solder for ECU's, a variety of quantities were provided depending on the specific ECU. The calculation used in the renewal request utilised the highest quantity reported by EUROMOT members able to calculate the lead quantity, 13.88mg. This reflects a worst case estimate, as some EUROMOT members reported quantities as low as 1.6mg of lead in solder in ECU's.

Based on this, the number of units placed on the EU market were identified as being 119,680 which would result in the following calculation:

Total weight of lead placed on the EU market on an annual basis = weight of lead in the solder multiplied by the number of units placed on the EU market = $13.88\text{mg} \times 119,680 = 1661158.4\text{mg} = 1.66\text{Kg}$

It has to be taken under consideration that EUROMOT has been actively engaging in reducing the use of lead in solder, as can be seen by the removal of sensors and actuators from the scope of the exemption. It can therefore be considered that the scope of the exemption has been reduced by two thirds, although the exact proportion of the amount of lead in ECU's compared to previous sensors and actuators cannot be calculated.

Although the basis for the previous calculation has not been able to be identified, it could be that the previous evaluation took into consideration the entirety of the weight of the solder point, rather than the actual content of lead. In this renewal request, only the weight of the lead has been provided on the basis that up to 40% lead is contained within the solder.

Another potentially contributing factor is the change in technologies and the push towards miniaturization of electronic components to achieve lighter and more versatile assemblies. Such miniaturization can be seen through industry publications, such as RoHM semiconductor³ which states that ECU's now are typically not more than 20mmx20mm. Any reduction in size of ECU's will reduce the quantity of lead solder necessary for the connections in the ECU. Therefore creating a reduction in the quantity of lead placed on the EU market.

³ [A Trend Towards Miniaturized Electronics A Trend Towards Miniaturized Electronics \(rohm.com\)](https://www.rohm.com)

4. The exemption request form uses both the abbreviations 'ECU', which stands for engine control unit, and the term 'ECM', which we assume stands for engine control module. Please clarify whether these terms are used interchangeably.

The terms Engine Control Unit (ECU) and Engine Control Module (ECM) are used interchangeably in the exemption renewal submission.

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 to be included into the review report.