

Consultation Questionnaire Exemption Request 2017-7

for „Lead in solders of sensors, actuators and engine control units (ECUs) that are used to monitor and control engine systems including turbochargers and exhaust emission controls of internal combustion engines used in equipment that are not intended to be used solely by consumers. “, requested for 5 years

Abbreviations and Definitions

EEE	electrical and electronic equipment
ECU	engine control unit
ELV	End of Life Vehicles
ICE	internal combustion engine
NRMM	Non-Road Mobile Machinery
Pb	lead

Background

The Oeko-Institut and Fraunhofer IZM have been appointed by the European Commission, within a framework contract¹, for the evaluation of applications for exemption from Directive 2011/65/EU (RoHS 2), to be listed in Annexes III and IV of the Directive.

EUROMOT has submitted a request for the above mentioned 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=284>).

This exemption request covers use of lead in solders of sensors, actuators and engine control units that are required for the operation of internal combustion engine (ICE) systems that are in scope of the RoHS directive, except types intended to be used solely by consumers. According to the applicant, the exemption is needed at this time as any changes to engines that could affect safety, reliability or emissions of substances regulated by the Non-Road Mobile Machinery (NRMM) Emissions Regulation has a very long development and reliability validation cycle. Internal combustion engines that are in scope of RoHS are also in scope of the NRMM Emissions Regulation. The conditions experienced in and close to an engine and exhaust can be very severe with elevated temperatures and vibration levels that may cause early failure of solder bonds. The applicant states that as a result, the reliability of engines made with lead-free solders cannot be assured and extensive research needs to be carried out. If an engine is redesigned so that lead-free soldered components can be used, re-validation under the NRMM Emissions Regulation will be required as this has mandatory emissions and durability requirements and also involves

¹ The contract is implemented through Framework Contract No. FWC ENV.A.2/FRA/2015/0008 of 27/03/2015, led by Oeko-Institut e.V.

extensive engine testing. Although many engines are used in types of equipment that are covered by specific exclusions of the RoHS Directive, such as in forms of transport, there are certain types of equipment that are not excluded. RoHS includes in scope some types of NRMM that are leased, so may be used by both professionals and consumers. These types of products are used for long periods daily unlike dedicated consumer products and so experience the same stresses and reliability issues as dedicated professional products. Most of these products, however, face the same technical challenges in assuring the safety, reliability and emissions of products under both RoHS and other relevant European Union directives, meaning that an exemption is critical in allowing them to continue serving the European market.

The applicant is aware that RoHS-compliant versions of certain components are available, as similar components are used in the automotive sector (light duty vehicles), which have to be lead-free to comply with the European ELV Directive. However, the applicant argues that the use conditions for NRMM in the scope of this exemption request are more severe compared to passenger road vehicles in scope of the ELV Directive. Further, it is explained that although the maximum temperature and vibration experienced by passenger car engines and NRMM engines are similar, the proportion of time that NRMM engines experience high temperature and severe vibration will be considerably more than passenger car engines.

EUROMOT has requested the exemption for relevant equipment falling under category 11 for the maximum validity period, which is 5 years under category 11.

For details, please check the applicant's exemption request at:
<http://rohs.exemptions.oeko.info/index.php?id=284>

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 equipment falling under category 11 of Annex I, proposing the following formulation:
“Lead in solders of sensors, actuators and engine control units (ECUs) that are used to monitor and control engine systems including turbochargers and exhaust emission controls of internal combustion engines used in equipment that are not intended to be used solely by consumers.” for 5 years
 - a. Do you agree with the scope of the exemption as proposed by the applicant?
 - b. Please suggest an alternative wording and explain your proposal, if you do not agree with the proposed exemption wording.
 - c. Please explain why you either support the applicant's request or object to it. To support your views, please provide detailed technical argumentation / evidence in line with the criteria in Art. 5(1)(a) to support your statement.

2. Please provide information concerning possible substitutes or developments that may enable reduction, substitution or elimination, at present or in the future, of lead in the applications/products in the scope of the requested exemption;
 - a. In this regard, please provide information as to alternatives that may cover part or all of the applicability range of the applications/products in the scope of the requested exemption;
 - b. Please provide data as to application specifications to support your view.
3. 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 in the scope of the requested exemption.
 - a. Please explain what part of the application range is of relevance for such initiatives (in what applications substitution may 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.
4. EUROMOT is an industry association and as such not a manufacturer of components and equipment subject of this exemption request. EUROMOT has provided an exemplary list of manufacturers of engines (e.g. Caterpillar, Daimler, GE, Volvo) and manufacturers of EEE that use these engines (e.g. Bauer, Black and Decker, Case New Holland).
 - a. Which manufacturers produce sensors, actuators, and ECUs for engines in the scope of this exemption request? Please provide company names and, if possible, contact details.
 - b. Which of the manufacturers of engines and EEE relevant to the scope of this exemption request are currently *not* members of EUROMOT? Please provide company names and, if possible, contact details.
5. The applicant has stated that the use conditions for EEE in the scope of this exemption request are more severe compared the use conditions that passenger vehicles in the scope of the ELV Directive are subjected to. This is stated as the reason why the available lead-free components for the automotive sector cannot be used in EEE in the scope of this exemption request. However, the applicant has only listed examples of extreme conditions without specifying for which particular EEE those apply.
 - a. Please provide a list of relevant EEE to which extreme use conditions apply and provide quantitative data on the use conditions that clearly illustrate why lead-free components available for the automotive sector cannot be used, specifically for each type of EEE (i.e. provide ranges and/or values above/below which specific EEE operate for parameters such as temperature, duty cycle, share of time at full load, etc.).
 - b. Please provide a list of relevant EEE in the scope of this exemption request which are currently on the market, may be used by consumers (via sale or rental) and do not require an exemption (examples may be hedge trimmers, lawnmowers, brush cutters, cement mixers, among others).

- c. Please provide a list of relevant sensors, actuators, and ECUs to which extreme use conditions apply in specific EEE relevant to this exemption request and provide quantitative data that clearly illustrate why lead-free components available for the automotive industry cannot be used (i.e. provide ranges and/or values above/below specific components operate for parameters such as temperature, duty cycle, share of time at full load, etc.).
 - d. Please detail manufacturers of sensors, actuators, and ECUs, whose components have been proven to be sufficiently reliable under the described severe use conditions, without using lead in solders?
6. As part of the evaluation, socio-economic impacts shall also be compiled and evaluated. For this purpose, please provide details in respect of the following:
 - a. Annual volume of EEE of EEE in the scope of the requested exemption made available on the EU market and worldwide.
 - a. Estimations as to possible additional waste to be generated should the exemption not be granted (e.g. stocks of EEE in scope of this exemption request, which cannot be rented out to consumers after July 2019);
 - b. Estimation of impacts on employment in total, in the EU and outside the EU, should the exemption not be granted. Please detail the main sectors in which possible impacts are expected – manufacturers of equipment in scope of the exemption, e.g. producers of NRMM, manufacturers in the supply chain, retail, etc.
 - c. Please estimate additional costs associated should the exemption not be granted, and how this is divided between various sectors (e.g. private, public, industry: manufacturers, suppliers, retailers).

In case parts of your contribution are confidential, please provide your contribution in two versions (public /confidential). Please also note, however, that requested exemptions cannot be granted based on confidential information!

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.