

Stakeholder Consultation Questionnaire: Exemption No. 8(g)

“Lead in solders to complete a viable electrical connection between semi-conductor die and carrier within integrated circuit flip chip packages”

Abbreviations and Definitions

ELV Directive Directive 2000/53/EC

Background

The Oeko-Institut and Fraunhofer IZM have been appointed by the European Commission, within a framework contract¹, for the review of exemptions in Annex II of Directive 2000/53/EC (ELV). The aim of this project is to evaluate whether the use of lead in the above mentioned exemption is still unavoidable and if the continuation of the exemption is therefore justified in line with Art. (4)(2)(b)(ii) of the ELV Directive.

In the last review² of this exemption under the ELV Directive³ in 2015, the applicants claimed that flip chips, like other parts to be used in vehicles, have to pass a specific reliability test, which would qualify them for further application-specific testing for use in vehicles. The applicants claimed, however, not to know which flip chips have already passed this test.

Exemption 15 of Annex III of the RoHS Directive covers the use of lead in flip chips as well. In the last review⁴ of this exemption in 2015/2016, the exemption was recommended to be restricted in scope. The current Commission proposal⁵ for the future wording of RoHS exemption 15 reflects this recommendation:

“Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies:

- *a semiconductor technology node of 90 nm or larger;*
- *a single die of 300 mm² or larger in any semiconductor technology node;*
- *stacked die packages with die of 300 mm² or larger, or silicon interposers of 300 mm² or larger.”*

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.

² Gensch, Carl-Otto [Öko-Institut e.V.], et al. 2015 “7th Adaptation to Scientific and Technical Progress of Exemptions 8(e), 8(f), 8(g), 8(h), 8(j) and 10(d) of Annex II to Directive 2000/53/EC (ELV): Report for the European Commission DG Environment under Framework Contract No ENV.C.2/FRA/2011/0020,” accessed August 10, 2015, http://elv.exemptions.oeko.info/fileadmin/user_upload/Final_Report/ELV-Exemptions_Amended_Final_2015-06-29.pdf

³ Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles, ELV Directive, European Union (21 October 2000), accessed December 5, 2013

⁴ Gensch, Carl-Otto, Öko-Institut e. V. 2016 2016 “Assistance to the Commission on Technological, Socio-Economic and Cost -Benefit Assessment Related to Exemptions from the Substance Restrictions in Electrical and Electronic Equipment - Study to assess renewal requests for 29 RoHS 2 Annex III exemptions,” https://circabc.europa.eu/sd/a/eda9d68b-6ac9-4fb9-8667-5e561d8c957e/RoHS-Pack_9_Final_Full_report_Lamps_Alloys_Solders_June2016.pdf

⁵ C.f. https://ec.europa.eu/info/law/better-regulation/initiative/174433/attachment/090166e5b8931a27_en

Exemption 8(g) is due for review in 2019. This questionnaire has been prepared for the stakeholder consultation held as part of the evaluation. 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. (4)(2)(b)(ii) of Directive 2000/53/EC (ELV), which you can download from here:

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0053>

Additional background information can be found on the exemption page accessible through the following link: <http://elv.exemptions.oeko.info/index.php?id=69>

If you would like to contribute to the stakeholder consultation, please answer the following questions:

Questions

1. Please explain whether the use of lead in the application addressed under Exemption 8(g) of the ELV Directive is still unavoidable so that Art. 4(2)(b)(ii) of the ELV Directive would justify the continuation of the exemption. Please be specific with your answer, for example clarify, if applicable, what types of vehicles your answer refers to, i.e., conventional vehicles and various types of hybrid and electric vehicles, and which functionalities and applications the exemption still needs to cover.
2. Can the wording of exemption 8(g) be aligned with the wording proposed for the equivalent exemption 15 of RoHS-Annex III (see specification above under “Background”)?
3. Please explain the efforts your organisation has undertaken to find and implement the use of lead-free alternatives for automotive uses. Please refer to alternatives, which at least reduce the amount of lead applied or eliminate its necessity altogether.
4. Please provide a roadmap specifying the necessary steps/achievements in research and development, including a time scale for the substitution or elimination of lead in this exemption.
5. What is the amount of lead that will be contained in the applications in the scope of this exemption in vehicles
 - a. placed on the EU market and
 - b. worldwide
 in case the exemption remains valid beyond 2019? Please provide a substantiated estimate, clarifying how you have arrived at the stated result.
6. Overall, please let us know whether you agree with the necessity to continue the exemption and sum up your arguments for or against its continuation.

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.

1. References

- Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles. ELV Directive European Union. October 21, 2000. Accessed December 5, 2013.
- Gensch, Carl-Otto [Öko-Institut e.V.], et al. 7th Adaptation to Scientific and Technical Progress of Exemptions 8(e), 8(f), 8(g), 8(h), 8(j) and 10(d) of Annex II to Directive 2000/53/EC (ELV) 2015.
http://elv.exemptions.oeko.info/fileadmin/user_upload/Final_Report/ELV-Exemptions_Amended_Final_2015-06-29.pdf.
- Gensch, Carl-Otto, Öko-Institut e. V. 2016 Assistance to the Commission on Technological, Socio-Economic and Cost - Benefit Assessment Related to Exemptions from the Substance Restrictions in Electrical and Electronic Equipment - Study to assess renewal requests for 29 RoHS 2 Annex III exemptions 2016.
https://circabc.europa.eu/sd/a/eda9d68b-6ac9-4fb9-8667-5e561d8c957e/RoHS-Pack_9_Final_Full_report_Lamps_Alloys_Solders_June2016.pdf.