

Questionnaire 7 Exemption 5 of RoHS Annex IV

Acronyms and Definitions

COM	European Commission
GWP	Global warming potential
Pb	Lead
W	Tungsten

1. Background

Bio Innovation Service, UNITAR and Fraunhofer IZM have been appointed¹ 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.

You submitted information to substantiate your request for the renewal of the above-mentioned exemption. This information was reviewed and as a result, we ask you to kindly answer the below questions for further clarification of your request until 06 July 2021 latest.

2. Questions

- 1) In the answer from 18 June 2021 to the questions posed by email on the 19 May 2021 you stated *“Globally, 0% and 100% recycling of either metal (Pb or W) are both unrealistic. Both lead and tungsten are recycled, but the important point is that global demands for tungsten and lead are significantly more than is available from scrap alone and so in both cases, more virgin metal will always be needed whenever these metals are used. So the correct approach for the comparison of the LCAs will be to use the actual proportions of recycled and virgin metals that are used globally.”* However, the LCA you provided applied that “net scrap approach” only for lead and not for tungsten (as stated on p. 38 of the LCA slide deck). The conclusions (p. 42) state *“the life cycle comparison of Lead and Tungsten show a potential risk (net values show a similar order of magnitude), only if Tungsten is recycled via clean scrap or scrap re-melting”*. Additionally, as asked before, the recycling scenario for tungsten only provides results for GWP.

Could you therefore provide numbers for the net scrap approach or the 100% recycling scenario for tungsten for impact categories beyond GWP?

Thinkstep calculated only the GWP for 100% recycled sintered tungsten metal and did not calculate the other impacts. However, as tungsten is not classified as being hazardous to human health or to the environment, it would therefore be reasonable to assume that most, of the impacts from tungsten are primarily due to energy consumption. COCIR has therefore calculated the hypothetical impacts for 100% recycling of tungsten as well as more realistic impacts for 40% recycled / 60% primary metal. These were calculated using the two values provided by Thinkstep for sintered tungsten metal basic scenario (see slide 19) and the 100% recycled value provided in slide 37. These are provided below.

¹ It is implemented through the specific contract 070201/2020/832829/ENV.B.3 under the Framework contract ENV.B.3/FRA/2019/0017

Impacts (units as in ThinkStep presentation)	Lead basic scenario	Tungsten metal sintered basic scenario	Hypothetical scenario for 100% tungsten sintered recycling metal	More realistic values based on 40% tungsten recycled (ITIA estimate 35 - 40%)
Data source	Thinkstep LCA	Thinkstep LCA	GWP from Thinkstep LCA, rest are calculated values	Calculated from two scenarios
Global Warming Potential (GWP 100 years)	13	714	252 (Thinkstep slide 37)	529.2
Ozone Layer Depletion Potential	3.7×10^{-10}	1.6×10^{-10}	5.6×10^{-11}	1.18×10^{-10}
Abiotic Depletion (ADP elements)	0.0014	0.47	0.17	0.348
Abiotic Depletion (ADP fossil)	133	12100	4271	8968
Acidification Potential (AP)	0.05	3.73	1.32	2.765
Eutrophication Potential (EP)	0.01	0.69	0.24	0.511
Photochem. Ozone Creation Potential	-1.52×10^{-4}	0.23	0.08	0.170
Primary energy demand from ren. and non ren. resources (net cal. value) (MJ)	167	13100	4624	9709



Human Toxicity Potential (HTP inf.)	1.56	138	48.71	102.28
Terrestrial Ecotoxicity Potential (TETP inf.)	0.52	3.21	1.13	2.379
Freshwater Aquatic Ecotoxicity Pot. (FAETP inf.)	0.04	13.9	4.91	10.302
Marine Aquatic Ecotoxicity Pot. (MAETP inf.)	780	63000	22235	46694

Please note that answers to these questions may be published as part of the evaluation of this 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.

It would be helpful if you could kindly provide the information in formats that allow copying text, figures and tables to be included into the review report.

