

1st Questionnaire to the exemption request for B-2016

Exemption for “lead and cadmium in electric windows and doors”

1. Abbreviations and Definitions

CaZn	Calcium Zinc
Cd	Cadmium
EPD	Environmental Product Declarations
EPPA	European PVC Window Profile and Related Building Products Association
LCA	Life-cycle-assessment
Pb	Lead
PVC-U	(Unplasticized/Rigid) Polyvinylchloride

2. General background

BiPRO GmbH has been commissioned by the European Commission (EC) to evaluate two applications for granting new exemptions to be included into the Annexes of RoHS Directive 2011/65/EU (RoHS 2).

EuroWindow AISBL has submitted an exemption request for “lead and cadmium in electric windows and doors” that has been subject to a preliminary evaluation. The information you provided within the request has been reviewed by BiPRO which has led to some questions that need clarification. The relevant questions are outlined below.

3. Questions

3.1. General questions related to the exemption request

- Within chapter 2 of the application form, a specific wording for the exemption should be proposed. This is missing.

Taking into account that, as mentioned in chapter 8 (A) 1. of the application, Annex XVII of REACH contains in its entry 23 a restriction for “*mixtures and articles containing recovered PVC if their concentration of Cd (expressed as Cd metal) does not exceed 0,1 % by weight of the plastic material in the following rigid PVC applications: (...) (b) doors, windows (...)*”.

Taking this restriction into account, we would suggest that the wording of the requested exemption uses a parallel wording, or make reference the threshold concentration defined by that entry. Alternatively, you may wish to propose another wording of the exemption.

- **A derogation from the directive shall be granted for windows and doors, being manufactured out of plastic window profiles containing recovered PVC, in case these windows and doors may be equipped or retrofitted with electric and/or electronic devices.**
- No information included in the application has been highlighted as proprietary information. Please confirm that all information provided is meant to be published?
 - **All information provided is meant to be published.**

3.2. Questions related to the technical description of the exemption request

- Subject of the request is an exemption for Cd and Pb in recycled PVC-U profiles of electronic doors and windows. However, the information and data included in the application form is mostly related to recycled PVC profiles without distinguishing whether they are used in electrical / electronical equipment. For instance, within chapter 4 (A) 5 regarding the amount of substance entering the EU market annually through application for which the exemption is requested, it is stated *"PVC windows contribute with 203,962 tons (42%) to the VinylPlus framework"* the share of EEE to this remains unclear. Similarly, the provided *"Progress Report on Rigid PVC Window Recycling within the Voluntary Commitment of the PVC Industry, VinylPlus"* does not provide information on electronic windows specifically. Please reconsider this estimation.
 - **When PVC window and door profiles as well as their related building products are manufactured it is not known whether the final product (windows and doors) will be equipped with electric or electronic equipment (EEE).**
- In chapter 4. (A) 7., the request states that *"recycling has a positive environmental effect"* without giving detailed further evidence. May we ask to provide further evidence backing this statement, if possible considering the transfer of Cd and Pb in the PVC to be recycled?
 - **The use of recycled PVC has a strong positive environmental impact by closing the loop towards a circular economy, by reducing the use of raw materials and by reducing the primary energy demand in the extrusion process and thus aims to achieve low carbon manufacturing. This is demonstrated by the sensitivity analysis**

below as a result of a life cycle assessment for environmental product declarations (source: Institut Bauen und Umwelt IBU, 2016).

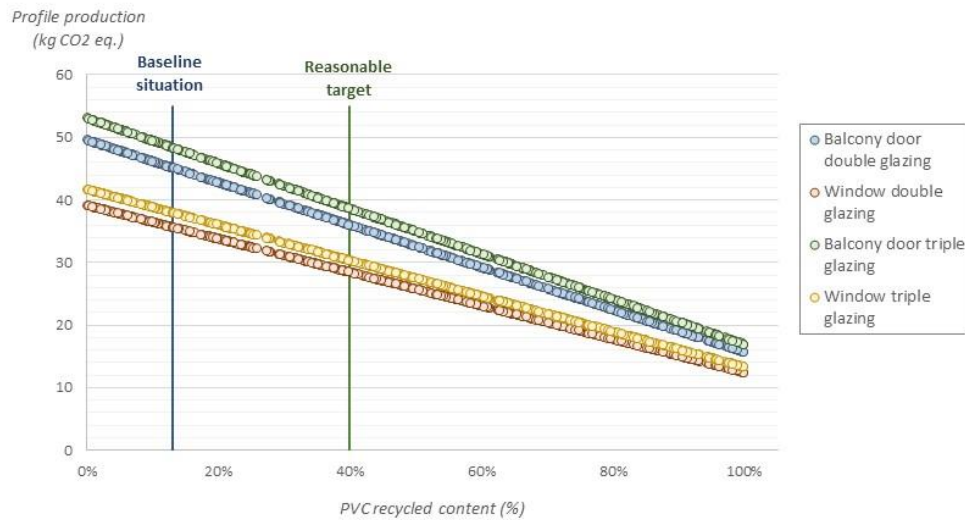


Figure 1: Sensitivity concerning the use of recycled PVC

- In the same chapter, as regards the LCA of recycled PVC-U profiles in electric windows and doors reference is made to Environmental Product Declarations for PVC windows, e.g. available at <http://www.ift-service.de/epd/uebersicht.faces>. We understand that the LCAs to which reference is made in this chapter are related to *non-recycled* PVC windows and doors. Please confirm, and if possible please provide applicable LCA for recycled PVC-U window profiles in electric windows and doors.
- **With regard to the low rate of EEE PVC windows and doors (estimate < 1%) all life cycle assessments and hence EPDs refer to both, articles containing recovered PVC and non-containing electric and/or electronic devices.**

3.3. Questions related to possible preparation for reuse or recycling of waste from EEE

- It is understood from the answer to chapter 5. 1) that there is a closed loop system for PVC profiles established for the collection of post-consumer windows and door sets. Also the report attached to the application includes information on such system. However we understand that the information provided is not related to PVC profiles stemming from electric windows and doors containing Cd and/or Pb. Please confirm.

- **A functioning post-consumer recycling system for PVC windows and doors has been installed in 2002 and is continuously growing in volumes. The system is managed by well established clearinghouses, for instance REWINDO GmbH.**
- **The scheme essentially consist of a controlled loop recycling which refers to both, post-industrial and post-consumer waste streams. Even quite seldom, used PVC windows equipped with EEE can enter into the post-consumer waste stream. This equipment will be dismantled and separated like pane and hard-ware and hence will enter an own material specific recycling process.**

Is it possible to indicate / estimate the post-consumer collection rate of electric windows and doors with PVC-U profiles containing Cd/Pb?

- **We estimate the part of windows equipped with electric or electronic devices below 1%.**
- In chapter 5 3) it is stated that *“In articles which are recycled – In 2014 around 60,000 tonnes post-consumer PVC containing approx. 600 tonnes of post-consumer PVC in EEE waste with up to approx. 3 tonnes RoHS substances”*. We understand that these amounts are not related to PVC-U profiles from electric windows and doors, and further are not related specifically for Cd and Pb. Please confirm. Please provide specific data or estimations if possible.
- **Yes, we confirm.**

3.4. Questions related to justification for exemption

- To our understanding the application seeks to justify the exemption based on the condition outlined in article 5(1) a. of RoHS 2 Directive
“(…) provided that such inclusion does not weaken the environmental and health protection afforded by Regulation (EC) No 1907/2006 and where any of the following conditions is fulfilled: (...) – the total negative environmental, health and consumer safety impacts caused by substitution are likely to outweigh the total environmental, health and consumer safety benefits thereof.”

Please confirm.

- **We confirm, that the use of recycled PVC does not weaken the environmental and health protection afforded by the EC 1907/2006 and outweigh likely environmental, health and consumer impacts.**

Please provide information (such as environmental assessments) with a view on “*the total negative environmental, health and consumer safety impacts caused by substitution*” and the “*total environmental, health and consumer safety benefits*”, if possible both and separately regarding Cd and Pb.

- **Lead and cadmium are already substituted in today’s rigid PVC formulations. Only the use of PVC recyclate may result in exceeding the threshold defined by REACH and RoHS. Medical test results of workers involved verify that the use of recovered PVC does not pose any risk to health, safety and environment.**
- **The reuse of PVC waste, however, has a proven socio-economic benefit in particular with regard to decarbonisation, circular economy, competitiveness and raw material availability. For instance, the today’s ratio of around 16% recovered PVC used in PVC profiles reduce primary energy demand by approximately 8% (source: “Environmental Product Declaration for double-glazed PVC Windows, § 6.3 Sensivity concerning the use of recycled PVC (source: <https://epd-online.com/PublishedEpd/Detail/9185>).**
- **All these benefits will be lost when recycling of post-consumer PVC waste will be at disposal instead of closing the loop towards a circular economy.**

3.5. Questions related to REACH compliance

- Please explain how the impact of entry 23 of Annex XVII of REACH should be taken into account for the purpose of the exemption (information already provided as part of your answer to section 3.1 of this document does not need to be repeated).
- **As suppliers we ensure that PVC window profiles are labelled when containing recovered PVC.**



- **In addition to that customers are informed according to art. 33a, REACH.**

➤ Are there any documents from the process of discussion and adoption of EU Regulation 494/2011 which may be of use for the present exemption request?

- **To enable the use of recycled PVC waste containing lead and cadmium, the adoption of EU Regulation 494/2011 was generally based on the existence of a controlled loop recycling scheme to limit/reduce environmental risk of Cadmium in case of recovered PVC. This applies when using mixtures produced from PVC waste for construction products such a windows and doors.**

- **According to our best knowledge, cadmium and lead are embedded in the polymer matrix and practically do not migrate. Studies affirm this conclusion and name a diffusion coefficient of $D_p \approx 1 \times 10^{-14}$ for lead and cadmium in rigid-PVC (source: "Migration of Substances from Waste PVC", Peter Mercea, Christof Losher, FABES Ltd. Munich).**

- **Furthermore, art. (12) of the Commission Regulation 494/2011 states (...) The use of recovered PVC should be encouraged for certain construction products because it allows the reuse of old PVC. Consequently, a higher limit value for cadmium should be granted for these construction products (...). Same applies with regard to semi-finished construction products (PVC window profile systems) retrofitted with EEE.**

- **Art. 3 of 1999/177/EG allows plastic crates to exceed (...) 600, 250 and 1000 ppm for lead, cadmium, mercury and chrome (...) when (a) a controlled loop recycling scheme exists and (b) if not initially added to the manufacturing process (art 4).**

Please note that answers to these questions are to be published as part of the available information relevant for the stakeholder consultation to be carried out as part of the evaluation of this request. If your answers contain confidential information, please provide a version that can be published along with a confidential version, in which proprietary information is clearly highlighted.