1st Questionnaire (Clarification Questionnaire) Exemption No. 7c-I (request for renewal and change of wording)

Exemption for „ Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound“

Acronyms and Definitions

HPZT	Hard PZT
PTC	Positive Temperature Coefficient, materials increasing their electrical resistance with increasing temperature; as PTC ceramics used in PTC resistors or PTC thermistors
PZT ceramics	Ceramics consisting of a mixture of **P**b**Z**rO_3 and Pb**T**iO_3

Background

The Oeko-Institut and Fraunhofer IZM have been appointed within a framework contract[1] for the evaluation of applications for the renewal of exemptions currently listed in Annexes III of the new RoHS Directive 2011/65/EU (RoHS 2) by the European Commission.[1]

Bourns Inc. submitted a request for the renewal of the above mentioned exemption. The request has been subject to a first evaluation. The information you have referred has been reviewed and as a result we have identified that there is some information missing and have formulated a few questions to clarify some aspects concerning your request before we can start the online consultation.

Please answer the below questions until 11 August 2015 latest or otherwise let us know until when you can provide the requested information.

Questions

1) In the 2008/2009 review[2] of the Annex to Directive 2002/95/EC (predecessor of today's RoHS Directive 2011/65/EU), the following applications were identified for ceramics containing lead:
    i. PZT ceramics

[1] Contract is implemented through Framework Contract No. ENV.C.2/FRA/2011/0020 led by Eunomia

[2] Gensch et al. 2009

ii. Dielectric ceramics
iii. PTC ceramics
iv. Thickfilm technology

Please allocate your application of lead in ceramics or glass to one of the applications listed above, or, in case the above list does not cover your application, add a new application.

Many of Bourns products fall into two of the applications identified in the 2002/95/EC:

iii. PTC ceramics: Ceramic PTC Resettable Fuses
iv. Thickfilm (TF) technology: Chip arrays, Chip resistors, TF Molded DIPs, TF Molded SIPs, TF Surface Mount Wide Body (SOL), TF Surface Mount Medium Body (SOM), TF Conformal SIP, Power Resistors, Encoders, Panel Controls, Precision Potentiometers, Trimming Potentiometers, ESD Protector Arrays

However, the RoHS2 (2011/65/EU) 7c-I definition states “Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound.” Many diode parts fall into the lead in a glass matrix compound application including Transient Voltage Suppressor Diodes, High Voltage Rectifier Diodes, Fast Response Recifier Diodes, Bridge Rectifier Diodes, Schottky Barrier Rectifier Chip Diodes. These may contain lead in the glass passivation of semiconductor chips. Some magnetic component using ferrite cores may also contain lead in the glass portion of the core. Other applications may include glass sealants. These are the majority of glasses uses for Bourns but there are other minor applications that fall under ‘lead in glass or ceramic matrix’.

2) You say you do not know the amount of lead coming onto the EU market under the requested exemption. Could you estimate the amount of lead worldwide that would be used due to the exemption (in total, not only for Bourns)? Please substantiate your estimate with a rough calculation.

With the wide use of applications for electronic components, subassemblies containing electronic components and finished products containing electronic components, it is not possible for Bourns to determine the total amount of lead in glass for all products entering into the EU market. Bourns’ usage of lead in glass is for specific electronic components as mentioned in question 1. Once our parts are sold either directly or through distribution, we do not have information on how all parts are used. Bourns’ parts are not finished parts but used in the assembly of other goods such as cell phones and computers. Bourns cannot determine where all global parts that claim exemption 7c-I are used and the final destination of that finished product. Further, the end products that use these parts may not be under the RoHS scope. There may be other applications using this exemption that are out of the scope of Bourns customer base. There are just too many unknowns to provide a good estimate.

3) You mention proprietary lead-free glass solutions which you successfully apply in some of your components. Could you please provide more details about your lead-free glasses and the components in which you apply it?

Within our Trimming Potentiometer product line, our research team has developed lead-free inks for low to mid-range resistance values for some applications. These substitutes are a form of calcium silicate borate glass. The challenge is the higher end resistance values which we are still trying to find a suitable solution. These inks systems are used on the Trimming Potentiometer products only. Still there are some trimming potentiometers that no solution has yet been found for all resistance values. It varies based on the application of the part. Some termination inks still use lead-containing glass.

Bourns has other product lines that also use thick film inks containing lead-glass materials with different applications. Each product line using these lead-based thick film inks is unique so a one-size-fits-all application does not work. Bourns continues to work with our suppliers, explore possible solutions, experiment with possible alternatives. It is a slow process with research, experimentation, testing, scale-up, qualification & reliability testing. If there is a failure along the way, the process starts over.

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 in the course 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. Please take into account that any recommendation on the continuation or revocation of exemption can be based on publicly available information only.

References

(Carl-Otto Gensch, Öko-Institut e. V., et al. 19 February 2009) *Adaptation to scientific and technical progress under Directive 2002/95/EC: Final Report*. With the assistance of Stéphanie Zangl, Rita Groß, Anna Weber, Öko-Institut e. V. and Otmar Deubzer, Fraunhofer IZM. Freiburg: . Accessed July 14, 2015. http://ec.europa.eu/environment/waste/weee/pdf/final_reportl_rohs1_en.pdf; http://ec.europa.eu/environment/waste/weee/pdf/report_2009.pdf.