

Attention: Marianne Klingbeil

Subject: **Stakeholder consultation** regarding RoHS Annex potential exemptions for the use of certain substances in Electrical and Electronic Equipment

Comment on Item 7: **Lead and Cadmium in optical and filter glass**

Dear Marianne:

#### Introduction

Caddock is a manufacturer of high performance electronic components located in the USA. Much of our components are electronic ceramic parts, high performance resistors. Companies in Europe, that manufacture the finest equipment in their field of business, use our electronic components in their systems. Our electronic components are used in applications such as: Laboratory Instruments, Analytical Instruments, Electron Microscopes, Train controls and power systems, Telecommunications power supplies, Welding equipment, Commercial Aircraft, Microwave transmitters, power consumption meters, airport security systems, etc. We have developed and presently manage, in our business, proprietary glass material technologies that are essential to our electronic ceramic parts.

#### Comment regarding **Lead and Cadmium in optical and filter glass**

Based on our experience with Lead and Cadmium in glass materials we understand the importance of this exemption. Both Lead (Lead Oxide) and Cadmium (Cadmium Oxide) play a very important role to glass matrix processing and performance that can not be duplicated presently by any substitute material combination that is presently known in the electronics industry. Lead Oxide provides a fluxing agent that gives glass processing benefits not presently achievable with other materials. Cadmium (Cadmium Oxide) provide a toughening quality that helps the durability of the glass matrix (avoiding micro-cracking and crazing), as well as, other benefits that facilitate glass processing and performance. We know of no substitutes for these materials that will give the same level of qualities in processing and in performance in the desired glass material.

#### Recommendation:

There are many high performance materials in our industry that gives special performance for unique uses in the highest quality professional equipment. Glass matrix materials, including ceramic materials, are an extremely important technical area where subtle benefits in the material can provide great performance benefits in the products offered for use in "performance" electrical and electronics equipment. We would recommend that the exemption be worded in a way that allows the benefits of Lead Oxide and Cadmium Oxide to be used to provide their great performance benefits to glass materials in our electronics industry. The glass matrix tightly binds the Lead and

Cadmium in a way that they are not readily dispersed into the air or leached in a land fill. We would suggest the modification of the language of this exemption as follows:

**Lead and Cadmium in glass (such as optical glass, filter glass, electronic component glass)**

As you know, Lead already has an exemption for its use in electronic ceramic parts. The performance benefit of Cadmium is irreplaceable relative to its contribution to important performance characteristics of glass (ceramic) matrix materials. Although there are some potential substitutes, they are only close counterfeits of the performance that can be achieved by the original materials. The amount of lead and cadmium used in glass within electrical and electronics equipment is small but the performance benefit is great. The risk to the environment is negligible since the materials are bound in glass. This change in language would help relieve this technical problem.

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