European Semiconductor Industry Association

ESIA submission to Öko-Institute Stakeholder Consultation on Diantimony Trioxide Annex ll Dossier - RoHS *(Version 2: 4/12/2019)*

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The European Semiconductor Industry Association (ESIA) welcomes the opportunity to give a response to consultation.

Diantimony Trioxide is used as flame retardant synergist in semiconductor packaging. It is used in conjunction with halogen and other metal oxides. This is not noted in the annex ll dossier despite previous ESIA inputs. In principle the majority of the resins are thermosets and not thermoplastics, therefore having limited availability for recycling and Sb recovery. As resins in thermosets in the waste phase do not behave like thermoplastics.

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Diantimony Trioxide is used in resin and it has been drastically reduced in the recent years thanks to the efforts done by the semiconductor industry to move out from halogenated flame-retardant use. The halogen free program is a voluntary program within the EEE industry. However, for some high-performance and high reliability semiconductor products with critical technology limits (e.g. networking and connectivity products) still require diantimony trioxide as there is no low halogen alternatives with effective competitive performance in the market. If diantimony trioxide were to be added to annex ll, exemptions would be necessary in these specific areas.

Alternative materials have substituted diantimony trioxide with other metal hydroxides and these are still based on thermoset resins. There are no direct alternatives available for diantimony trioxide. Manufactures may have to change the polymer resins. Therefore, more research and development is required to identify alternatives to meet product performance and reliability requirements. Semiconductor products need to ensure their working ability in different environments and for long non interrupted periods of use. Resins have the key function to protect the semiconductor chip from external agents so their sealing ability is as important as the mechanical resistance. When moving to diantimony trioxide free resins there is a further need to check the resin compatibility with the metal finishing of the semiconductor substrate.

ESIA would ask that due consideration is given in this dossier to outlining and justifying through the RoHS methodology the specific criteria of how the presence of diantimony trioxide meets the 4 criteria of article 6.1 of the RoHS directive. It is not apparent that the current Oko-institut dossier addresses this key point.

ESIA is an Industry Association of:
EECA : European Electronic Component Manufacturers' Association
Rue de la Duchesse 11/13, B-1150 Brussels
Tel: +32 2 290 36 60 · Fax: +32 2 290 36 65 · E-mail: secretariat@eusemiconductors.eu · Web: www.eusemiconductors.eu
EECA is registered in the EU Transparency Registry: 22092908193-23

In terms or regrettable substitution, it is also worth noting that the use of some other antimony compounds help remove the need for the use of lead in electronics.

To confirm there would be socio-economic impacts on semiconductor device (component) manufacturers were ATO to be restricted.

The potential risk to employee health is well managed in semiconductor manufacturing through stringent risk management measures and safety practices as standard to prevent release of materials and chemicals during all stages of the manufacturing process. Potential exposure to the workplace employee is well managed during production due to the use of closed systems. This potential risk is well controlled through the application of closed system manufacturing equipment which are installed in a cleanroom environment and a high level of personal protective equipment. Automated delivery systems are installed to create a barrier between workers and the process and protect against chemical and physical hazards in the work environment.

About ESIA

The European Semiconductor Industry Association (ESIA) is the voice of the Semiconductor Industry in Europe. Its mission is to represent and promote the common interests of the Europe-based semiconductor industry towards the European Institutions and stakeholders in order to ensure a sustainable business environment and foster its global competitiveness. As a provider of key enabling technologies the industry creates innovative solutions for industrial development, contributing to economic growth and responding to major societal challenges. Being ranked as the most R&D intensive sector by the European Commission, the European Semiconductor ecosystem supports approx. 200.000 jobs directly and up to 1.000.000 induced jobs in systems, applications and services in Europe. Overall, micro- and nano-electronics enable the generation of at least 10% of GDP in Europe and the world.

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