

Statement of “Verband der Leiterplattenindustrie” (the Association of the Printed Circuit Board Industry) and the trade association Electronic Components and Systems of ZVEI – Zentralverband Elektrotechnik und Elektronikindustrie e.V. (the German Electrical and Electronic Manufacturers' Association)

about

the potential revision of the regulation within RoHS regarding the use of TBBPA as flame retardant by the European Parliament (EU),

based on the

revision of the RoHS Directive – with the aim to extend the scope to ban harmful substances. The Öko-Institut Freiburg was assigned by the European commission (EC) to conduct the “Study on hazardous substances in electrical and electronic equipment, not regulated by the RoHS Directive” (draft presented on May 4, 2008 on occasion of an expert workshop in Brussels).

General Remarks

At the moment the European Commission conducts a revision of RoHS and, consequently, there is as well a discussion about Tetrabromobisphenol-A (TBBPA). This substance is used as a flame retardant in about 90 % of all printed circuit boards used. The use of TBBPA in printed circuit boards is essential to guarantee the function of electronic products and to meet the stringent requirements for flame retardants.

With the reports of Scientific Committee on Health and Environmental Risks (SHER)¹ dated January 2008 and September 2005 a comprehensive risk assessment (RA)² of TBBPA was conducted and the very process was declared as being closed. The SHER-report arrives at the conclusion that the risk assessment was conducted with proper diligence and recommends the unrestricted use of TBBPA.

Certain problems are seen by the risk assessment only if TBBPA is used as an additive. These risks, however, can be eliminated by the risk minimising measures in the document mentioned above.

Resins for base materials (laminates) used for the production of printed circuit boards are manufactured out of epoxy-resins which are partially brominated. For this purpose diglycidylethers of biphenyl-A are to react with Tetrabromobisphenol-A. TBBPA in its free form can't be isolated from the polymers being manufactured by this method, and, consequently, is no longer available as such.

Following the draft of Öko-Institut Freiburg, submitted on May 4, 2008 the use of TBBPA should be banned resp. massively restricted. These recommendations have been addressed to the European Commission. On the other hand, the scientific committee of SHER (Scientific Committee on Health and Environmental Risks) consisting of international high ranking expert members in January 2008 came to the conclusion that TBBPA can be used without constraint.

The recommendations of the Öko-Institut are tantamount to a prejudgement of TBBPA, which we decidedly have to dismiss.

¹ SHER (Scientific Committee on Health and Environmental Risks – a) Opinion on „Risk Assessment on Tetrabromobisphenol-A, Human Health Part, EINESCCS N°: 201-236-9, adopted by the SHER during the 7th plenary meeting of 23 September 2005 und b) Opinion on „Risk Assessment on Tetrabromobisphenol-A, Environmental Part, EINESCCS N°: 201-236-9, adopted by the SHER during the 21st plenary meeting of 15 January 2008

² Risk Assessment a) 2,2',6,6'-TETRABROMO-4,4'-ISOPROPYLIDENE DIPHENOL (TETRABROMOBISPHENOL-A) Human Health Part März 2006 und b) 2,2',6,6'-TETRABROMO-4,4'-ISOPROPYLIDENE DIPHENOL (TETRABROMOBISPHENOL-A) Environmental Part of January 2007

The printed circuit board industry always is prepared to support the European bodies and institutions in their efforts to avoid any damages to the environment. However, the necessary approach has to be substantiated scientifically and, therefore, reproducible. One method ratified by the European Union is described in detail in the preface of the Risk Assessment Report. For this reason we insist that the approach specified and the results of the Risk Assessment, which have been finalised in January 2008, are observed unconditionally. This approach is embraced and should not be bypassed because of political reasons.

The preface of the "Risk Assessment of TBBPA" determines in detail the modality of the scientific assessment for a substance. This creates predictability of legal decisions and trust in decisions by European institutions. Thus a scope is established for the industry, in the limits of which responsible action is possible for all. We support this explicitly.

We assert:

Important studies and reports relevant and scientifically conducted in the EU acknowledge that TBBPA is harmless to the environment if used within the parameter of proper use. TBBPA is used for the production of base materials without any problems already for many years. There is no negative impact known.

Economic situation

We know that a new regulation of TBBPA will be linked to enormous cost for the development and production of base materials with new flame retardants. These costs would make base materials definitely very much more expensive and, in consequence, most products in Europe which contain electronics as well.

From the technical point of view any ban of TBBPA as a reactive component is linked to high cost. Therefore, from the financial point of view it would endanger the existence of the European printed circuit board industry, which predominantly consists of medium sized companies.

Restrictions for printed circuit boards containing TBBPA used as reactive agent cannot be declared unilateral for Europe, as this might result in a distortion of competition. Basically it would be necessary to establish reasonable conditions on the political level to avoid disadvantages for the European printed circuit board industry. This could be done by a ban of imports for raw materials and final products.

To this the following facts

- For TBBPA-modified systems exists a proven experience and track record for many years already. This offers security in applications regarding their long-term reliability. This especially is valid for the automotive industry, for defence and aeronautic applications. Long-term experience is not available for halogen free systems. Out of today's experience by far not all TBBPA containing systems can be replaced by halogen free systems.
- As the electrical and dielectrical properties are very much different between halogen free and halogen containing systems many modules would have to be re-engineered. The financial expenditures hardly can be estimated for this task and has to be seen as an additional expense. In addition, for certain areas of application (automotive, medical industry, aviation and aeronautics) a period of conversion of up to 10 years has to be taken into account.
- First of all it would be necessary to develop halogen-free alternatives. For laminate manufacturers a period of 5 years and expenses amounting to millions in double or even triple digits are a realistic estimate. Furthermore, it is questionable whether there are alternatives for all systems. Out of today's knowledge this is not the case.
- The bromine free material would have to be re-approved for all process steps at each manufacturer of printed circuit boards. In addition to a time frame of about 2 to 5 years this will require additional re-qualification cost of about 12 to 15 million EUR for each individual manufacturer.

- Today, bromine free resin chemistry is up to 40 % more expensive than the halogen (TBBPA) containing chemistry. A 100 % transfer would cause additional expenses to the European industry of printed circuit boards of about 150 million EUR per year – just for the procurement of the necessary base material.

Impact of a change

In the event of a change to TBBPA-free printed circuit boards a large number of tasks and liabilities would have to be dealt with and fulfilled. This would apply to many industrial products and processes all along the whole value chain, starting from procurement going to production and use and up to disposal. In addition to this as well the extra time needed and the administrative expenses are causing considerable supplementary spending. The principal aim of the European Commission to restrict preventive tasks and liabilities to ecologic relevant volumes only will not be reached by the restriction of TBBPA. Furthermore potential replacements are not yet examined accordingly. In fact, TBBPA is used for decades without any problems and no ecological harm was determined. It as well is questionable whether the replacements are toxicologically harmless and environmentally compatible as there are no verifications available as yet. This especially applies to phosphorous-organic compounds which are used as reactive component.

There will be a drastic increase of costs generated when the numerous directives are translated, which are not possible to be compensated without the loss of competitiveness. All strategies and concepts currently discussed have to be scrutinised simultaneously. They have to be analysed comprehensively whether they are going to offer any positive contributions to the international competitiveness of the European industry, to environmental protection, to innovation and to the attraction of Europe as a location for production. Especially small and medium sized enterprises with their prominent role as a motor for innovation and for economic development will be penalised decisively as they neither have the necessary resources nor the necessary information available to enable them to use any replacements of TBBPA.

Printed circuit board technology is a key position for cutting edge performance. Important technical fields of the future, like industrial electronics, defence, medical, automotive, communication and information technology may maintain their leading position only by making use of the innovative forces and the competence for further development of the PCB industry and their suppliers being present.

Objective

The project on hand shows that there is a negative attitude towards TBBPA which amounts to prejudgement. The SHER-committee in contrast arrives at a positive rating for the risk assessment of TBBPA: the use of TBBPA is possible without any restrictions. We assent to this scientific position.

Basing on the actual research results on hand the European industry for printed circuit boards and VdL/ZVEI have to insist on the unrestricted use of TBBPA – especially when TBBPA is used as a reactive component.