

### Background

Since decades, eco labels and green procurement specifications, substances in articles (like additives in polymers) have been banned based on their assigned risk phrases (R-phrases). Risk phrases were defined in the Dangerous Substances Directive (67/548/EEC), based on the risk attributed to a dangerous substance or preparation (mixture), e.g. R25 – Toxic when swallowed, R45- May cause cancer). In 2008 this Directive has been replaced by the CLP Regulation (Classification, Labelling and Packaging Regulation, 1272/2008), which is aligned to the Globally Harmonized System (GHS). By 2015 the R-phrases will be replaced by hazard statements (e.g. H301 - Toxic if swallowed, H350 - May cause cancer).

Until 2018 not all chemicals require a REACH dossier with the proper test data and risk assessment. Risk phrases and/or hazard statements are self-declared, i.e. substances with limited data will have less self-declared risk phrases/hazard statements and may appear to be better alternatives but the real hazards may be unknown. There is little incentive for manufacturers to provide data that may result in assignment of a risk phrase/hazard statement. A chemical with limited data and un-known hazard could be selected because of the lack of risk phrases/hazard statements only to be considered a regrettable substitution later when additional hazard data is obtained.

Also, as risk phrases/hazard statements are self-declared, these may vary from manufacturer to manufacturer and between data sources.

In summary, the quality issue with the above approach is that if the data source shows that a certain risk phrase/hazard statement has not been assigned to a specific substance, it can NOT be concluded that other risk phrases/hazard statements do not apply. This is because the substance might not have been tested for that specific hazard property.

### TBBPA item P7.17 in both declarations

A need has been identified to clarify the two different forms of TBBPA that are available and used on the market, additive and reactive. Therefore, explanations on the use of these, their differences in the final product are given further below.

## GUIDANCE TO MANUFACTURERS

### Changed substance restriction philosophy in the 5<sup>th</sup> edition of the ECMA-370 standard

Based on the above, in the 5<sup>th</sup> edition of the ECMA-370 standard, it has been decided to change the flame retardant declaration from absence of a number of listed risk phrases/hazard statements to instead declare which risk phrases/hazard statement have been assigned to the used flame retardant(s).

The 1<sup>st</sup> priority data sources are:

- ECHA C&L Inventory database, and
- ECHA list of registered substances, see below for more information.

Regarding non-halogenated flame retardants, information about self-declared R-phrases/hazard statement can be found in the PINFA product selector: [www.pinfa.org/product-selector.html](http://www.pinfa.org/product-selector.html)

The identified R-phrases/hazard statements should be specified in the declaration, section P15. Due to the uncertainty of which hazard properties the specific substance has been tested for, a new disclaimer has been added as a footnote:

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**<http://www.ecma-international.org/publications/standards/Ecma-370.htm>**

*'Note B4: If a certain substance has been assigned a certain risk phrases/hazard statement in the referenced source, this does not necessarily mean the substance has been tested for all of the hazards referred to by a certain customer.'*

Finally, the only certain way to find out about the entire performed hazard testing of a specific substance is to contact the individual substance manufacturer.

### C&L Inventory database

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<http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

This database contains classification and labelling information on notified and registered substances received from manufacturers and importers. It also includes the list of harmonised classifications. The database is refreshed regularly with new and updated notifications. However, updated notifications cannot be specifically flagged because the notifications that are classified in the same way are aggregated for display purposes.

Classifications derived from joint submissions to the REACH registration process are flagged accordingly. For more information on these substances, please consult the [Registered substances database](#).

### Registered substances

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<http://echa.europa.eu/information-on-chemicals/registered-substances>

NB:

1. *The data published is compiled from joint or individual submissions for a substance. Thus the search filters below will be applied to compiled data from **ALL** of the registration dossiers submitted to ECHA. For example a search for a given Registrant Name and Total Tonnage Band between 10 000 and 1 000 000 tonnes may return results. However it must clearly be considered that the given registrant may be one among many, and that the Total Tonnage Band for the compiled data is calculated from the non-confidential quantities manufactured and imported by **ALL registrants**.*
2. *The data published reflects the information contained in ECHA's databases as of the last updated date, and that not all data may be available for all substances.*

#### **TBBPA item P7.17 in both declarations**

Even if it's still voluntary to add the information if additive or reactive TBBPA is used in the printed circuit board material, we encourage manufacturers to add this information as a way to raise the quality of the declaration (see guidance to customers below for understanding).

#### **GUIDANCE TO CUSTOMERS**

Customers are encouraged to read all of the above as some significant changes have been introduced in the 5th edition of The Eco Declaration, TED.

In addition to these changes, it is important to understand that substances in articles, like flame retardants in plastic parts, do not pose any risk to the user of the product. Flame retardants are imbedded in the material to ensure compliance with applicable safety standards.

#### **TBBPA item P7.17 in both declarations**

Differences between additive and reactive use of TBBPA, CAS number 79-94-7, R50/53 = H4105.

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### Additive TBBPA

TBBPA is used as an 'additive' flame retardant, mainly in ABS plastic housings. In addition, TBBPA is used as an intermediate in the production of other brominated flame retardant systems, derivatives and brominated epoxy oligomers where it is integrated into the resin as well. Typical concentrations of TBBPA in the final flame retarded material depend of the material thickness, but can be in the range from 5-10%.

### Reactive TBBPA

The main application of TBBPA is in Printed Circuit Boards (PCB) or laminates. It is used in more than 95% of FR-4 printed circuit boards, the most commonly used board in electronic devices. In this application, TBBPA is a reactive flame retardant, in other words, it no longer exists as a free chemical in the final board but forms part of the polymeric backbone of the resin. In Europe, TBBPA as a substance is classified as H4105 (very toxic to aquatic species, former R50/53). However, this classification no longer applies when it is reacted into the epoxy resin, as TBBPA becomes one of the building blocks for a different substance. Measurements indicate that the unreacted TBBPA concentration in final material is far below 100ppm.

### References:

[http://en.wikipedia.org/wiki/Tetrabromobisphenol\\_A](http://en.wikipedia.org/wiki/Tetrabromobisphenol_A)  
[www.bsef.com/uploads/Factsheet\\_TBBPA\\_25-10-2012.pdf](http://www.bsef.com/uploads/Factsheet_TBBPA_25-10-2012.pdf)  
[www.bsef.com/our-substances/tbbpa/about-tbbpa](http://www.bsef.com/our-substances/tbbpa/about-tbbpa)