

FACT sheet

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Brominated Flame Retardant

Deca-BDE

Decabromodiphenyl Ether

> Introduction

Deca-BDE is a Brominated Flame Retardant (BFR) used in many domestic and industrial appliances and equipment. It is highly effective in increasing resistance to fire and allows up to 15 times more time to escape when a fire occurs. Deca-BDE presents no significant risk for the environment or human health.

> Applications and fire safety

Deca-BDE is used in plastics for electric and electronic (E&E) (e.g. plastic housings of TV sets), in the transportation sector (e.g. automotive and aviation industries) and in construction and building (e.g. wires, cables, pipes). It is also used as a flame retardant in textiles to enable upholstered furniture to comply with fire safety standards for public places and buildings. The use of Deca-BDE ensures

compliance with the most stringent fire safety requirements for home furniture in Ireland and the United Kingdom. Statistics for the UK alone estimate that over 4,000 lives have been saved since 1988 as a result of legislation mandating that upholstered furniture be made with a high level of fire resistance.¹ In the United States, similar fire safety requirements exist in California.



> Health and Environmental Profile



Deca-BDE is one of the flame retardants with the most scientific data supporting its compatibility in terms of human health, environmental profile and its significant contribution to fire safety.

It has been subject to more than 1,000 scientific studies around the globe to assess its potential effects. These concluded that Deca-BDE presents no significant risk for human health or the environment.

Studies have shown that plastics made fire resistant with Deca-BDE

maintain their mechanical properties as well as their flame retardant properties after many recycling steps. Deca-BDE has also very low potential for formation of dioxins/furans during recycling. This guarantees possible reuse of these valuable materials.

> BSEF Emissions Control Programme

VECAP (the Voluntary Emissions Control Action Programme) is a proactive product stewardship initiative established by the brominated flame retardant industry. The principles of the programme, as it stands today, were developed in cooperation with several EU Member States, the European Commission and the BFR Industry.

VECAP is designed to manage, monitor and minimise industrial emissions of chemicals to the environment, through a partnership with the supply chain. Through VECAP, manufacturers and users of chemicals work together to esta-

lish and share best practices on the handling of chemicals to reduce and prevent emissions to the environment.

As such, VECAP represents an advanced practice on the new EU legislation governing the management throughout the supply chain of chemicals in Europe, better known as REACH. REACH requires downstream users to have more information and prepare an assessment of the substances they use for their specific applications. VECAP provides industry with practical tools in this respect.

Initially, VECAP was set up in Europe for the flame retardant Deca-BDE after the finalisation of the EU risk assessment. While no risks were identified for Deca-BDE, but European Authorities expressed their concern at the findings of very low levels of Deca-BDE at in the environment close to industrial sites. Since 2004, the implementation of VECAP for Deca-BDE has been very positive, in particular thanks to user commitment to the programme.

Further information on VECAP can be found at: www.vecap.info

VECAP for Deca-BDE: 2008 status²

- In Belgium, France, Germany, Italy and UK the level of user commitment to VECAP for Deca-BDE has reached over 95% for textile industry users and over 80% for plastic industry users.
- In Canada and the US, 79% of Deca-BDE users have committed to VECAP.

- In France, the constant improvements of the process and the increase in application of VECAP have led to a reduction in the estimated direct emissions to air and water of Deca-BDE from over 1000 kg per annum (estimated in 2005) to less than 10 kg in 2008 in the textiles sector.

> Deca-BDE in Europe

Since July 2008 Deca-BDE is allowed for use in Europe in all applications except in E&E equipment.

EU Risk Assessment

After 10 years of scientific research, both the environment and human health risk assessment reports were completed and published in the EU Official Journal in May 2008. The review of more than 1,000 scientific studies concluded there was no need for risk reduction measures. EU scientists also agreed that environmental findings of Deca-BDE in Europe should be addressed by the initiation of an environmental monitoring programme, a bio-monitoring programme and a neurotoxicity study. These programmes are carried out under the supervision of the risk assessment authorities. The status of the three programmes is the following:

- **Levels of Deca-BDE in the environment:** a 10-year environmental monitoring study is being conducted and preliminary results indicate no overall increase in the level of Deca-BDE in the environment.
- **Presence of Deca-BDE in humans:** a 10-year biomonitoring study is being carried out, initial results will be available in 2009.

- **Neurotoxicity:** a study is being conducted and will be concluded in the first quarter of 2009.

REACH

REACH is the new European Regulation for the Registration, Evaluation, Authorisation and Restriction of Chemical substances. REACH entered into force on 1 June 2007.

The aim of REACH is to improve the protection of human health and the environment through early identification of hazardous properties in chemical substances. As with all chemicals, Deca-BDE will be registered under REACH. Since commercial Deca-BDE has already been subject to advanced testing under the EU risk assessments process, the evaluation work required under REACH has, in large part, already been carried out.

EU Directive on the Restriction of the use of certain Hazardous Substances in E&E Equipment (RoHS)²

The RoHS Directive restricts hazardous substances from E&E, including PBBs and PBDEs. Deca-BDE was exempted from the RoHS Directive on 15 October 2005. This Decision was taken by the European Commission on the basis of the conclusions of a EU risk

assessment, and of the VECAP programme. On 1 April 2008, the European Court of Justice annulled this Commission Decision on procedural grounds and ruled that Deca-BDE can no longer be used in electronics and electrical applications for the EU market from 1 July 2008. Industry users can still apply for temporarily exemptions for certain applications under the procedure laid out in article 5 of the Directive.

Norway

On 1 April 2008, a unilateral Norwegian ban of Deca-BDE took effect. The ban covers the production, import, export, use and the placing on the market of Deca-BDE, as well as preparations and products containing 0.1 % by weight of Deca-BDE used in textiles, furniture and insulation.

Applications in the transport sector are not covered by the rules. This unilateral action was taken by the Norwegian Government despite EU chemicals legislation, also applicable in Norway on the basis of the European Economic Area Agreement. This measure was opposed by the European Commission, the EFTA Surveillance Authority, a number of WTO partners, as well as Norwegian and European industry.

² For further information please consult the third VECAP annual progress report 2008

³ DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL - 27 January 2003 - on the restriction of the use of certain hazardous substances in electrical and electronic equipment

> Deca-BDE in Asia



The use of Deca-BDE is not subject to any regulatory restrictions in Asia. Both the Chinese and Korean RoHS

type regulations have exempted Deca-BDE from their lists of restricted substances for use in E&E equipment.

In Japan, reporting requirements on Deca-BDE are stipulated in the

Japanese PRTR Law⁴ enacted in July 1999. Yearly reports have to be produced on volumes of Deca-BDE imported, volumes used and quantities released into the environment.

> Deca-BDE in North America



In the US, Deca-BDE remains available for all uses and no federal action has been taken to restrict its use. While numerous pieces of state legislation seeking to restrict its use have been introduced in the past four years, 58 have failed to pass, been withdrawn, or amended to

remove Deca-BDE, and only two very limited bills have passed in Maine and Washington. Those bills still allow many major uses of Deca, and prohibit a few current or potential future uses. Few states also have on-going studies monitoring the use of Deca-BDE and related actions in other jurisdictions.

In Canada, Deca-BDE is listed as toxic under the Canadian Environmental Protection Act (CEPA) but

there is no restriction in its use. A 2006 strategy is developing an approach to minimise releases of Deca-BDE to the environment from textile and plastic manufacturing operations. This is likely to be based upon VECAP. End-of-life and waste disposal will also be evaluated by CEPA.

⁴ i.e. "Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in their Management"

For further information on Brominated Flame Retardants,
please visit:

www.bsef.com

BSEF is the international organisation of the bromine chemical industry,
whose remit is to inform stakeholders and commission science
on brominated chemicals such as flame retardants