Newsletter
National Service of Assistance
BPA SUBSTITUTION

INERIS
controlling risks
for sustainable development

N°6 september 2014

Actualités BPA

BPA REGULATORY NEWS

Europe sets a migration limit for bisphenol A in toys.

The European Commission has modified annex II of Directive 2009/48/EC on the safety a toys to include a migration limit of 0.1 mg/L for bisphenol A. Enacted on June 23, 2014, this provisions will become applicable as of December 21, 2015.

This threshold may change, given that the effects of bisphenol A are still being evaluated (in particular by the European Food Safety Authority).

Source: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2014:183:FULL&from=EN

BPA SUBSTITUTION NEWS

GRIMALID TR 55 and TR 90: polyamides substituted for polycarbonate.

The company EMS-GRIVORY has developed and is marketing a line of semi-crystalline polyamides that can be substituted for polycarbonate. The GRIMALID TR line is made up of amorphous homopolyamide- and copolyamide-type polyamides based on aromatic and cycloaliphatic patterns.

Depending on their manufacturers, these materials have the same level of transparency as polycarbonate, a lower density and better heat resistance; however, their mechanical strength, and in particular their impact strength, is lower than that of polycarbonate.

GRIMALID TR 55 and GRIMALID TR 90 meet the requirements of European Directive 2002/72/EC relative to materials in contact with food. Furthermore, the FDA (Food and Drug Administration) has authorized the use of GRIMALID TR 90 for applications in contact with food, as well as GRIMALID TR 55 for contact with foodstuffs having a maximum alcohol content of 8%.

In the United States, the NSFI (National Sanitation Foundation International) has approved the use of GRIMALID TR 55 for contact with potable water heated to 60°C, and to 82°C for GRIMALID TR 90.

GRIMALID TR 55 and GRIMALID TR 90 are approved in France for uses involving contact with potable water. In Germany and the United Kingdom, both of these products have been tested and approved for applications in contact with hot potable water (85°C).

GRIMALID TR 55 and GRIMALID TR 90 may therefore potentially be used in the field of containers for food (vacuum containers, bottles, coffee machine components) and drinking water (water bottles). Their use also extends to other fields such as the automobile sector (lubricant tank, automatic door locking system, etc.), sanitary equipment (taps, valves, etc.), electrical devices and electronics (electrical connectors, housings, etc.), the medical sector (observation window for protective masks), industrial applications (flow meters, observation windows, etc.) and sports and recreation (knife handles, watch bracelets, etc.).

Source: http://www.emsgrivory.com/fileadmin/ems-grivory/documents/brochures/Grilamid-TR_4007_en.pdf

A new solution for water jugs.

The company Equipolymers has filed a patent for a new solution intended for large beverage packaging, in particular water jugs: BISNEINEX.

Unlike the polycarbonate currently used to manufacture water jugs, BISNEINEX is a PET* free from bisphenol A.

According to its manufacturer, BISNEINEX is, by nature (it is a PET), approved in Europe and the United States for use in contact with food.

This PET is said to be suitable for different forming methods for thermoformable materials (injection molding, drawing-blowing, etc.). Also, according to the manufacturer, using BISNEINEX only requires minimal changes to existing production lines. The BISNEINEX™ technology has also been successfully tested by the main machine suppliers (Nissei, Husky and IMPCO).

According to Equipolymers, this resin has a number of advantages over standard PET, namely: good thermal stability of the bottles (low shrinkage), better esthetic performance in its final application, improved fall test results and high load performance.

The current primary application of BISNEINEX is large bottling, but a new grade of PET is in development for applications in the food packaging fields.

Source: http://equipolymers.com/bisneinex/

• PolyEthylene Terephthalate, synthetic polymer produced by polycondensation of glycol ethylene with terephthalic acid. PET is the most commonly used material to manufacture carbonated water bottles.

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Isosorbide to replace bisphenol A in epoxy resins.

Isosorbide, which comes from glucose, is a bio-sourced dialcohol that can be used as a monomer in polymer synthesis. Isosorbide has also already been identified as a substitute for bisphenol A for polycarbonate and polyester synthesis (cf. ANSES report [1]).

In 2010, a team from the New Jersey Institute of Technology filed a patent covering the synthesis of epoxy resins from isosorbide. The originality of this BPA-free technology consists of obtaining the pre-polymer hardening agent from isosorbide.

According to the team that developed this synthesis, the isosorbide-based epoxy resin has the same mechanical properties and vitreous transition temperatures comparable to those of a traditional epoxy resin. The absorption of water from the isosorbide can be controlled by modifying the skeleton of the epoxy prepolymer derived from isosorbide (ether diglycidyl isosorbide) and by adapting the hardening agent (aromatic isosorbide epoxides can have a water absorption below 1%).

The prepolymer derived from isosorbide may be either hydrophobic or hydrophilic; if it is hydrophobic, it will be able to replace the bisphenol A, and if it is hydrophilic, it may be substituted for the PEG (PolyEthylene Glycol).

We do not have recent information relative to marketed applications of isosorbide-based epoxy resins; in 2010, the team that developed those resins felt that they could potentially be used for all applications of traditional epoxy resins (inner coating for cans, glues, paints, etc.).

Isosorbide-based epoxy resins are still being researched. Different experiments suggest that the mechanical properties of isosorbide-based epoxy resins are at least equal to, and possibly even better than those of BPA-based resins (impact strength, bending strength, etc.), but their chemical strength is lower (resistance to acids, bases and hydrolysis).

Source: http://www.njit.edu/news/2010/2010-053.php

Publications

In July 2014, the INERIS published a technical-economic sheet dedicated to "BISPHENOLS F AND S".

Less studied than Bisphenol A, these other two compounds are nevertheless suspected of being endocrine disrupters and presenting similar risks.

The main uses of bisphenol F and bisphenol S are similar to those of bisphenol A; as a result, today those substances are considered to be potential substitutes for bisphenol A for some applications. Bisphenol F is used in epoxy resins and thermal papers. Bisphenol S is used in epoxy resins, polycarbonate, polyethersulfone, thermal papers, phenolic resins and polyester resins.

The study provides information relative to the regulation applicable to these two substances, shared uses between bisphenol A and bisphenols F and S, the quantities of bisphenols F and S produced or imported in France and Europe, their emissions into the environment and substitution solutions.

Direct link to the study:
http://www.ineris.fr/substitution-bpa/sites/default/files/documents/Fiche_BP_V8__1_.pdf

The INERIS has produced technical-economic sheets for more than 100 chemical substances. They can be found on the site http://www.ineris.fr/substances/fr/ "technical-economic" section.

Agenda

SCIENCE DRIVING CONSUMER PROTECTION: HOW PLASTICS DELIVER. Octobre 2014. Allemagne.
http://www.plasticseurope.org/science-driving-consumer-protection.aspx

25th ANNUAL THERMAL PRINTING CONFERENCE. November 2014. USA.
http://www.imiconf.com/Thermal%202014.html

THIN WALL PACKAGING 2014. December 2014. Germany.
http://www.amiplastics.com/Events/Resources/Programme/Thin%20Wall%20Packaging%202014.pdf

[1] ANSES – Substitution of bisphenol A study report – March 2013