

Editorial

A new website for expanded information on new substances

Dear SNA Chemicals Substitution Service readers,

We announced in the September 2016 previous newsletter an expansion of the website to new chemicals.

Now it's a done deal: the SNA has changed to offer you, in addition to those devoted to bisphenols, new information pages on alternatives to phthalates.

Phthalates are plasticizers of PVC, substances whose substitution is an important health issue because several of them have reprotoxic properties, are suspected of being endocrine disruptors, while they are present in a large number of substances or consumer products.

You can find an introduction and reference information on the uses of phthalates and their alternatives in two *INERIS* « *technical and economic data sheets* », available in the documentation section of the SNA site that is dedicated to phthalates.

Whereas we had launched in 2011 the SNA BPA focusing on food containers, the new SNA Substitution aims to document new applications of chemicals in other sectors.

We hope that the information on the alternatives to phthalates that we will propose (and those that we will continue to display for bisphenols) will be a practical aid to the economic actors to carry out a sustainable substitution.

Enjoy your reading !

For the SNA-Substitution team,
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Substitution news

EASTMAN VersaMax™ Plus : a general purpose and phthalate-free alternative to DEHP?

In 2015, chemical producer Eastman Chemical Co. introduced its new range of plasticizers VersaMax™ for PVC to the European market.

In 2016, this range of products was supplemented by the VersaMax™ Plus plasticizer. The latter is presented by Eastman as a general purpose plasticizer: the manufacturer therefore proposes it as an alternative, not only to DEHP but also to other phthalates used in place of DEHP, such as DINP.

Also according to Eastman, VersaMax™ Plus presents for formulators and producers the additional interest of its similar or superior performance to DEHP and DINP in plastisols^[1]: it allows to reduce (compared to DEHP) the drying time in dry blends^[2].

Finally, the manufacturer declares that the final PVC articles plasticized with VersaMax™ Plus would have equal or better performance in terms of transparency and abrasion resistance.

Sources

« Eastman extends VersaMax family of non-phthalate plasticizers », *Additives for Polymers*, Volume 2016, Issue 5, May 2016, Pages 3-4

« Eastman expands non-phthalate plasticizers range for the European market », *Additives for Polymers*, Volume 2015, Issue 5, May 2015, Page 3

« Improving performance while minimizing reformulation in dry blends and plastisols », *Webinar recording*, Tom Markley, Eastman, publié par SpecialChem, Octobre 2016



Substitution news

PEVALEN from PERSTOP: an alternative to reduce the use of flame retardants in PVC?

In 2014, the Swedish company PERSTOP introduced a new PVC plasticizer, PEVALEN, a polyol ester. According to its manufacturer, PEVALEN is a product intended for applications in indoor environment or close to the consumer (floor coverings, automobile interiors, textiles, toys, ...) notably because of its favorable environmental profile (low volatility, favorable carbon footprint).

PERSTOP also believes that the performance of this plasticizer is equal to or better than DEHP and DINP, the two major technical references on the market. PERSTOP also reports that PVC plasticized with PEVALEN has better synergies with several flame retardants (including antimony trioxide) than PVC plasticized with DINP.

This, combined with a lower emission of smoke during combustion (still compared to a formulation containing DINP), suggests that PEVALEN would significantly reduce the use of certain flame retardants or smoke suppressors in soft PVC, particularly in the main applications of PEVALEN, for which the use of flame retardants is important. However, these results obtained in laboratory, require to be confirmed, indicates the company.

Sources

« Perstop develops non-phthalate plasticizer for sensitive applications », *Additives for Polymers, Volume 2014, Issue 1, January 2014, Pages 5-6*

« Perstop claims flame retardant advantage for its Pevalen non-phthalate plasticizer », *Additives for Polymers, Volume 2016, Issue 6, June 2016, Pages 5-6*

« Pevalen™ Genuine non-phthalate high efficiency plasticizer », brochure disponible sur le site de Perstop (www.perstop.com)



Substitution news

Alternatives to BPA in Composite Dental Materials

Products derived from bisphenol A (Bis-GMA, Bis-EMA, and Bis-DMA), are used as monomers for the production of dental composites such as dimethacrylate resin used in dental cements^[1], dental sealing, and prostheses (crowns).

The potential presence of bisphenol A in the oral cavity could thus be linked to two phenomena:

- The incomplete reaction of the BPA-based monomers of the composite material;
- The free monomers degradation.

The presence of free monomers is linked to an incomplete photopolymerization of the material during its installation (penetration of radiation and / or insufficient application time), and / or its decomposition (under the effect of mastication, the action of enzymes and the variations of temperature).

Several materials can be substituted for composite BPA-based resins, such as resins based on the UDMA^[4] (urethane dimethacrylate) monomer: this material is made from monomers generating dimethacrylates resins also called «diurethane».

The UDMA-based composite resins find their advantage in their low viscosity, which allows better penetration of the resin, but have the disadvantage of a high retraction during their polymerization. It should also be noted that composite resins based on UDMA have a certain fragility.

There are several composite resins based on UDMA, e.g. re-constitution material MIMESIS DC, dental sealant 5 CONSEAL F, and VISALYS TEMP, a material for provisional products (crowns, partial crowns, bridges, inlays, onlays and facets).

Sources

http://www.apol.fr/APOL/Mimesis_DC_APOL.html

<http://www.sdi.com.au/en-ae/conseal-f/>

http://www.kettenbach.fr/dentaire/produits/couronnes-et-bridges-provisoires/visalys-temp_904.html



Events

PAPERWORLD Trade fair in Frankfurt (Germany) 28th - 31st January 2017

International trade fair dedicated to stationery, office supplies, and to thermal paper applications (rolls for cash registers, self-adhesive labels, fax paper, ...).

<http://paperworld.messefrankfurt.com>

PVC Formulation Conference 2017 in Düsseldorf (Germany), 27th February - 1st March 2017

Among the conferences offered on this occasion, two will be on plasticizers in the field of flexible PVC.

<http://www.amiplastics-na.com/Events/Resources/Programme/PVC%20Formulation%202017%20-%20Programme.pdf>

PACKAGING INNOVATIONS 2017 Event – Birmingham (United Kingdom) 1st - 2nd March 2017

Latest major trends and innovations in printing, sustainable packaging, materials, design, machinery, equipment, ...

<http://www.easyfairs.com/fr/packaging-innovations-birmingham-2017/packaging-innovations-birmingham-2017/>

[1] Material obtained by dispersing synthetic resins in a plasticizer. PVC plastisol is a primary form of PVC, intended for transformers which will produce objects for consumers or industrial users from the plastisol.

[2] Dry Blends, or dry mixes are also a primary form of preplasticized PVC, used by industrial processors.

[3] Devices to restore its normal shape to a tooth, for example after a dental cavity repair

[4] Diisocyanates may be used in the composition of this monomer, the potential risk of these substances is discussed in the context of the European REACH regulation.

[5] Dental sealants are plastic materials applied directly to the occlusal surfaces of teeth to take place in the pits and fissures and designed to prevent tooth decay.