



An alternative to APEO to reduce yellowing in polyamide, polyester and their blends with Elastane fibers during heat-setting

Abstract

This case story describes substitution of alkyphenoxyates (APEO) in the textile industry. The company G-Star performed an investigation of possibilities to substitute APEO for reducing yellowing in polyamide, polyester and their blends with elastane fibers during heat-setting. They identified and implemented fatty alcohol polyglycol ether as a suitable alternative.

Substituted substance(s)

Nonylphenol polyglycol ether
CAS No. 9016-45-9
Chemical group Glycol ethers

The substance is included in the "Hazardous Substance Database" according to SUBSPORT Screening Criteria (SDSC), since it is on the OSPAR list of substances of possible concern (PBT) and on the EU commission database of potential endocrine disruptors category 1 and on the SIN List.

The substance is: on the OSPAR list of substances of possible concern, endocrine disruptor (SIN List), endocrine disruptor cat. 1 (EU EDC database), as listed in the Substance Database according to SUBSPORT Screening Criteria (SDSC).

Classification

The substance has no harmonised classification according to Annex VI of Regulation (EC) No 1272/2008 (CLP Regulation)

[ECHA's Classification and Labelling Inventory](#)

Alternative substance(s)

Fatty alcohol polyglycol ether
CAS No. 68002-97-1
Chemical group Polyglycol ether

Classification

The substance has no harmonised classification according to Annex VI of Regulation (EC) No 1272/2008 (CLP Regulation)

[ECHA's Classification and Labelling Inventory](#)



Producer or supplier

Tanatex is the supplier of the alternative substance.

Evidence of implementation: There is evidence that the solution was implemented and in use at time of publication

Hazard assessment

The substituted substance is on the "hazardous substances database according to SUBSPORT screening criteria" (SDSC) since it is listed PBT on the OSPAR list of substances of possible concern and as an EDC in the EU commission database of potential endocrine disruptors and on the SIN List. The alternative substance has no CLP classification and is not listed on the SDSC.

Substitution description

Alkylphenoethoxylates (APEO) and Alkylphenol (AP) are widely used in the textile industry. AP's and APEO's are chemical compounds which due to their structure have at least one hydrophile and one hydrofobe functional group and have therefore the possibility to reduce surface tension.

G-Star is continuously striving towards sustainable solutions and achieving the goals of zero discharge of hazardous chemicals in its supply chain. One of these goals is completely phasing out APEO'S and AP's.

APEO's are known to be aquatic harmful and are one of the chemical groups mentioned in the G-Star Restricted Substances List (RSL). During factory audits, drums with chemicals containing APEO's were found in the warehouse. We contacted the chemical supplier and were informed that the product was reformulated. We informed the supplier about the reformulation of the chemical. At the same time the supplier was informed that it is forbidden to continue the use of this chemical and that it must be disposed of in a safe way in accordance with the authorities and regulations. The product found was a detergent based concept, with an APEO content of 70%. This has been changed to a waterbased concept. Added was a small percentage of Fatty Alcohol Polyglycol Ether (1-5%), as auxiliary to wet the fabric; without this the formula would not work. The result was an improvement both in components as in quantity. Fatty alcohol polyglycol ether was identified as a suitable alternative; this is mainly used as a substitute for the range of non-ionic tensides. Even in low application amounts, good results can be achieved.. This substitution process started in December 2012 and showed the substituted product is similar (up until now) in performance and lower in cost. The substitution will be continued on our global supply chain. The case shows that next to more difficult substitution cases, easy though not less important substitutions can be made.

Case/substitution evaluation

This case story describes the substitution of an alkylphenoethoxylate substance with a safer alternative, as a result after supply chain cooperation.