

Alkylphenol ethoxylates (APEO) in textiles

Analyses for APEO have been a fast growing issue for Eurofins over the last years.

Surprisingly to the producers, APEO have been detected in rather high amounts in textiles and leather. Eurofins offers reliable analyses for APEO

The most important APEO or alkylphenol ethoxylates for the textile industry are NPEO (nonylphenol ethoxylates) and OPEO (octylphenol ethoxylates) due to their detergent properties. About 90% of the produced APEO are in fact NPEO. The compounds are used in detergents, cleaning agents, or chemicals used for textile or leather production.

Toxicological characteristics are their hormone disruptive properties and the fact that they are toxic to aquatic organisms.

Furthermore, APEO are very persistent and difficultly degradable in nature. These are all problem areas for wastewater treatment and discharging of wastewater into surface waters.



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Legislation and labelling

Since 1998 use of APEO in detergents has been forbidden in Germany - and since January 2005 the EU directive 2003/53/EG has forbidden the use of NPEO in higher concentrations than 0.1% in formulations. These compounds will often end in the wastewater and consequently form a problem in the environment - e.g. in rivers, lakes, etc.

Although forbidden in the EU many companies have production sites or suppliers outside Europe, where the use of NPEO is not forbidden. This is the reason why some European companies have established their own requirements with strict threshold values for NPEO and OPEO.

Textile eco-labels as the EU flower and Öko-Tex 1000 have also forbidden the use of APEO.



Testing method

In 2002 Eurofins Product Testing A/S established a method for determining even traces of APEO in textiles and since then Eurofins has performed several thousand analyses.

This makes Eurofins Product Testing A/S one of the most experienced and respectable laboratories as regards APEO testing. Round Robin tests in 2005 show that results from Eurofins Product Testing A/S are reliable and precise.

Only small amounts of sample are required for the analyses:

30 x 30 cm of textile, fabric, carpet, or leather
50 g of wool, yarn, or fibre
50 ml of liquid samples (chemicals, detergents, or agents)

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The sample of textile, fabric, carpet or leather is extracted. The extract is analysed with combined high performance liquid chromatography and mass spectrometry with positive mode electro spray ionisation (HPLC/MS).

The analyses include the octyl- and nonylphenol ethoxylates from 3 to 15 ethoxy groups.

With this method even traces of NPEO and OPEO can be detected. Detection limit for textile samples is 0.2 ppm (mg/kg).



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