

ALKYLPHENOL ETHOXYLATES (APEOs)

Other Names Nonylphenol Ethoxylates (NPEOs; NPEs):
Polyethylene glycol nonylphenyl ether
Octylphenol Ethoxylates (OPEOs; OPEs):
Polyethylene glycol octylphenyl ether

CAS Number	Substance
9002-93-1	Polyethylene glycol 4-(tert-octylphenyl) ether
9036-19-5	Polyethylene glycol mono(octyl)phenyl ether
68987-90-6	Poly (oxy-1,2-ethanediyl), alpha-(octylphenyl)-omega-hydroxy-, branched

List continued in "Additional Information"

May Be Found In

- Industrial laundry detergent
- Scouring agents
- (e.g., wool and leather)
- Wetting agents
- Softeners
- Spinning oils (yarn and fabric)
- Emulsifier/dispersing agents for dyes and prints
- Impregnating agents
- Degreasing agents for leather hides
- Leather-finishing preparations
- De-gumming agents for silk production
- Dyes and pigment preparations
- Polyester padding
- Down/feather fillings
- Binders for interlinings
- Facility cleaning products

APEOs are primarily used as detergents in the textile wet processing industry but they are also used in the leather industry as degreasing products and in small quantities as emulsifiers or wetting agents in some dyestuff and pigment preparations.

Uses in the Supply Chain

APEOs are common ingredients in many chemical formulations used to produce apparel and footwear materials. They have been widely used as surfactants or emulsifiers in detergents, scouring agents, dye-dispersing agents, printing pastes, spinning oils and wetting agents. Legislation around the world restricts the presence of APEOs in finished products. Leading apparel and footwear brands have restricted or banned the use of APEOs in production of their products.

Why Alkylphenol Ethoxylates (APEOs) are Restricted¹

- APEOs can degrade into alkylphenols (APs) in the environment.
- Some APs are very toxic to aquatic life with long lasting effects.
- Some APs are suspected of damaging human fertility and unborn children.
- See the Guidance Document on Alkylphenols for more information on this class of chemicals.



Sourcing Compliant Materials from Your Suppliers

- Contact your suppliers and explain that you require their manufactured materials to be compliant with the current AFIRM RSL limit.²
- This includes fibers, yarns and fabric since APEOs have been widely used in spinning lubricants, sizing, pretreatment, dyeing, printing, finishing and coating. APEOs have also been widely used in industrial laundry detergents.
- Pay special attention to suppliers of wool, wool blends and leather, since APEOs have been widely used for scouring and as a dispersing agent for dyeing.
- Suppliers who use APEOs in production for other clients may have contaminated machinery that can introduce APEOs into their manufactured materials. Work with suppliers who have phased out the use of APEOs for all clients.
- Cleaning agents for equipment and maintenance may contain APEOs that can contaminate materials. Cleaning agents should not contain intentionally-added APEOs.
- Share this information sheet with your material suppliers and instruct them to work with their chemical suppliers to source APEO-compliant chemical formulations using the guidance in the next section.
- Have your suppliers confirm that their manufactured materials meet the current AFIRM limit with a certification or, if necessary, by providing a test report from a third-party laboratory.
- Perform risk-based checks of your suppliers' materials by submitting samples to a third-party laboratory for testing to ensure the limit is not exceeded.

Sourcing Compliant Formulations from Your Chemical Suppliers

- Contact your chemical suppliers and explain that you require chemical formulations such as textile finishing agents, dyeing chemicals, adhesives, printing inks and others with no intentionally added APEOs. Concentrations of APEOs in chemical formulations used for wet processing should be compliant with the current ZDHC MRSL whenever applicable.³
- Pay special attention to textile and leather auxiliary suppliers who supply chemicals for dyeing, printing, finishing, laundering, scouring and coating formulations.
- APEOs are often used as a dispersing agent in solvent-free, synthetic-leather manufacturing.
- APEOs may also be found in many fibre/yarn/fabric spinning lubricants and sizes.
- Check the Safety Data Sheets (SDS) of all chemical formulations to ensure that none of the APEO CAS Numbers listed in this Information Sheet is as an ingredient.
- Have your chemical suppliers confirm that their chemical formulations meet the ZDHC MRSL limits with a certification or, if necessary, by providing a test report from a third-party testing laboratory whenever applicable.
- Perform risk-based checks of your chemical suppliers' formulations by submitting samples to a third-party laboratory for testing to ensure the ZDHC MRSL limits is not exceeded whenever applicable.
- Discuss with your chemical supplier whether the below safer alternatives are suitable substitutes for your production needs.

Safer Alternatives

The following substances have been identified as examples of safer alternatives by the U.S. Environmental Protection Agency Design for the Environment Program (DfE). They may be suitable for your production needs. Any chosen alternative must be compliant with the limits stated above as well as any brand specific limits.



Chemical Information Document

68439-46-3	C9-11 alcohols, ethoxylated (6EO)
68131-39-5	C12-15 alcohols, ethoxylated (9EO)
64366-70-7	Oxirane, methyl-, polymer with oxirane, mono(2-ethylhexyl ether); Ecosurf EH-9
68515-73-1	Glucopyranose, oligomeric, decyl octyl glycosides
68411-30-3	Benzenesulfonic acid, C10-13-alkyl derivs., sodium salt
151-21-3	Sodium lauryl sulfate
9004-82-4	Polyoxy(1,2-ethanediyl), alpha-sulfo-omegadodecyloxy-, sodium salt
1338-41-6	Sorbitan monostearate

Additional Information

US EPA Design for the Environment Alternatives Assessment for Nonylphenol Ethoxylates

https://www.epa.gov/sites/production/files/2014-06/documents/npe_final.pdf

Visit ECHA's Candidate List of substances of very high concern to view dossiers for many restricted substances

<https://echa.europa.eu/candidate-list-table>.

There are many potential CAS numbers which comprise the APEO class of chemistries. Some of the more common ones are listed below:

CAS Number	Substance
9002-93-1	Polyethylene glycol 4-(tert-octylphenyl) ether
9036-19-5	Polyethylene glycol mono(octyl)phenyl ether
68987-90-6	Poly (oxy-1,2-ethanediyl), alpha-(octylphenyl)-omega-hydroxy-, branched
9016-45-9	Poly (oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-
26027-38-3	Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-
37205-87-1	Poly (oxy-1,2-ethanediyl), alpha-(isononylphenyl)-omega-hydroxy-
68412-54-4	Poly (oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched
127087-87-0	Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched

References

¹ Hazard information per harmonized classification and labelling approved by the European Union. Source: European Chemicals Agency, <http://echa.europa.eu/>

² Apparel and Footwear International RSL Management Group (Ed.). (2018, January 31). Restricted Substances List Retrieved <http://afirm-group.com/afirm-rsl/>

³ Manufacturing Restricted Substances List (Publication). (2015, December). Retrieved

<http://www.roadmapzero.com/programme/manufacturing-restricted-substances-list-mrsl-conformity-guidance/>