

About the use of Triton X-100 and its alternatives



What is Triton X-100 and what is it used for?

Triton X-100 is a non-ionic detergent (uncharged surfactant) that forms micelles. The areas of application in biochemical research are numerous. These include the purification and extraction of proteins, the activation of membrane proteins and many more. It is also a component of biological buffers and is used to reduce surface tension. It is also used in industry, e.g. in the surface treatment of metals or in cleaning agents. It is also commonly used as an emulsifier in artists' colours

Why is the use of Triton X-100 problematic?

The biodegradation of Triton X-100 is problematic. This produces a degradation product that is considered ecotoxic, as it has hormone-like properties and thus poses a potential danger to flora and fauna. LIT

For this reason, Triton X-100 was already included in 2012 by the ECHA (European Chemicals Agency) as a candidate on the list of substances of very high concern (SVHC) of the REACH regulation (Registration, Evaluation, Authorisation and Restriction of Chemicals) and has been on the list of substances subject to authorisation (Annex XIV of the REACH regulation) since 2017. Since 04 January 2021 ("sunset date" for Triton X-100), Triton X-100 can no longer be used without restriction.

What alternatives are there to Triton X-100?

There are now suitable alternatives on the market to avoid having to do without non-ionic detergents with the properties of Triton X-100. As sustainability is becoming increasingly important in the chemical industry, it is important to find alternatives with a low ecological footprint. This is also one of the 12 principles of "green chemistry" (point 10 deals with biodegradability). In our product range, this applies to the two products Tergitol™ (Art. no. 9975) and Ecosurf™ (Art. no. 0982). Both are non-ionic detergents with comparable properties to Triton X-100, but unlike the latter they do not form ecotoxic degradation products.



Well advised with Roth.

Technical Info

Technical properties of Triton® X-100 and our alternative products

Please note that the following data are typical values and do not form part of our specifications.

Properties	Chemical description	Tenside type	HLB	CMC [ppm]	pH value
Triton® X-100 Art. No. 3051	Octylphenol Ethoxylat	Non-ionic	13,4	189	6 (5% wässr. Lsg.)
Tergitol™ 15-S-9 Art. No. 9975	Sekundärer Alkohol Ethoxylat	Non-ionic	13,3	52	7,1 (1% wässr. Lsg.)
Ecosurf™ SA-9 Art. No. 0982	Mischung von C6-C16 ethoxylierten und propoxylierten Alkoholen	Non-ionic	11 – 13	22	7,1 (1% wässr. Lsg.)
Brij® 35 Art. No. 3051	Fettalkoholethoxylat	Non-ionic	16,9	56 – 107	5,5 – 7,5 (100 g/l, wässr. Lsg.)
Tween® 20 Art. No. 3051	Polyoxyethylen (20)-sorbitanmonolaurat	Non-ionic	16,7	~ 68	5 – 7 (50 g/l, wässr. Lsg.)

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