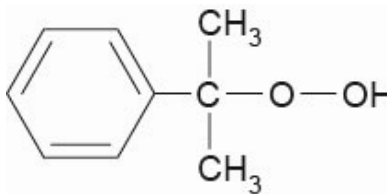


Trigonox K-LC

Cumyl hydroperoxide, 92% in solvent mixture



Trigonox® K-LC is an organic hydroperoxide suitable for use in fracking fluids. It can be used to break down the polymers used in hydraulic fracturing operations as an efficient and cost-effective alternative to encapsulated persulfates. Trigonox® K-LC exhibits exceptional performance in breaking down guar-based fracking fluids, ensuring a complete and efficient polymer degradation thereby improving the flow of oil or gas. An accelerator (e.g. reducing agent) can be used to further enhance the performance and reduce the activation temperature of Trigonox® K-LC. This allows for faster and more effective breaking of polymers, even at lower temperatures. Trigonox® K-LC is ideal for use in all types of fracking operations, including shale gas extraction, oil recovery and coalbed methane production.

CAS number
80-15-9

EINECS/ELINCS No.
201-254-7

TSCA status
listed on inventory

Molecular weight
152.2

Active oxygen content peroxide
10.51%

Specifications

Active oxygen	9.46-9.88 %
Appearance	Clear liquid
Assay	90-93 %
Color	0-200 Pt-Co

Characteristics

Water solubility	15 g/l
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Applications

Trigonox® K-LC can be used for the market segments: thermoset composites and oilfield with their different applications/functions. For more information please check our website and/or contact us.

Half-life data

The reactivity of an organic peroxide is usually given by its half-life ($t_{1/2}$) at various temperatures. For Trigonox® K-LC in chlorobenzene half-life at other temperatures can be calculated by using the equations and constants mentioned below:

0.1 hr	at 195°C
1 hr	at 166°C
10 hr	at 140°C
Formula 1	$k_d = A \cdot e^{-E_a/RT}$
Formula 2	$t_{1/2} = (\ln 2)/k_d$
Ea	132.56 kJ/mole
A	1.15E+12 s ⁻¹
R	8.3142 J/mole-K
T	(273.15+°C) K

Thermal stability

Organic peroxides are thermally unstable substances, which may undergo self-accelerating decomposition. The lowest temperature at which self-accelerating decomposition of a substance in the original packaging may occur is the Self-Accelerating Decomposition Temperature (SADT). The SADT is determined on the basis of the Heat Accumulation Storage Test.

SADT	70°C
Method	The Heat Accumulation Storage Test is a recognized test method for the determination of the SADT of organic peroxides (see Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria - United Nations, New York and Geneva).

Storage

Due to the relatively unstable nature of organic peroxides a loss of quality can be detected over a period of time. To minimize the loss of quality, Nouryon recommends a maximum storage temperature (T_s max.) for each organic peroxide product.

T_s max.	40°C and
T_s min.	-25°C to prevent crystallization
Note	When stored under these recommended storage conditions, Trigonox® K-LC will remain within the Nouryon specifications for a period of at least 3 months after delivery.

Packaging and transport

Trigonox® K-LC is packed in 200 kg HDPE drums. Packaging and transport meet the international regulations. For the availability, contact your Nouryon representative. Trigonox® K-LC is classified as Organic peroxide type F; liquid, Division 5.2; UN 3109.

Safety and handling

Keep containers tightly closed. Store and handle Trigonox® K-LC in a dry well-ventilated place away from sources of heat or ignition and direct sunlight. Never weigh out in the storage room. Avoid contact with reducing agents (e. g. amines), acids, alkalis and heavy metal compounds (e. g. accelerators, driers and metal soaps). Please refer to the Safety Data Sheet (SDS) for further information on the safe storage, use and handling of Trigonox® K-LC. This information should be thoroughly reviewed prior to acceptance of this product. The SDS is available at nouryon.com/sds-search.

Major decomposition products

Acetophenone, 2-Phenylisopropanol, Methane

All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable. Nouryon, however, makes no warranty as to accuracy and/or sufficiency of such information and/or suggestions, as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. Nouryon does not accept any liability whatsoever arising out of the use of or reliance on this information, or out of the use or the performance of the product. Nothing contained herein shall be construed as granting or extending any license under any patent. Customer must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes. The information contained herein supersedes all previously issued information on the subject matter covered. The customer may forward, distribute, and/or photocopy this document only if unaltered and complete, including all of its headers and footers, and should refrain from any unauthorized use. Don't copy this document to a website.

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Contact Us

Polymer Specialties Americas
polymer.amer@nouryon.com

Polymer Specialties Europe, Middle East, India and Africa
polymer.emeia@nouryon.com

Polymer Specialties Asia Pacific
polymer.apac@nouryon.com

The Nouryon logo consists of a stylized blue 'N' followed by the word 'ouryon' in a lowercase, sans-serif font. The 'N' is significantly larger and more prominent than the rest of the text.