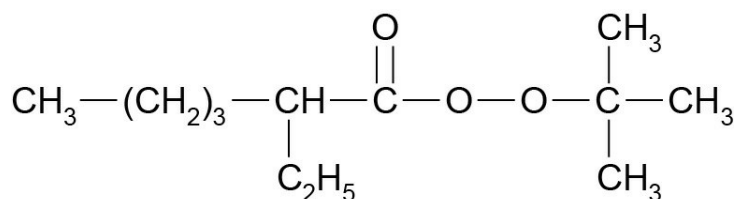


Trigonox 21-C50

tert-Butyl peroxy-2-ethylhexanoate



Trigonox 21-C50 is an initiator (50% active ingredient in odorless mineral spirits) used for curing unsaturated polyester, vinyl ester and acrylic thermosetting resins in the temperature range of 100-140°C.

CAS number
3006-82-4

EINECS/ELINCS No.
221-110-7

TSCA status
listed on inventory

Molecular weight
216.3

Active oxygen content
peroxide
7.40%

Specifications

Acid as 2-ethylhexanoic acid	0.3 %
Active oxygen	3.70-3.85 %
Appearance, 5-10 °C	Clear liquid
Assay	50.0-52.0 %
tert-Butyl hydroperoxide	≤ 0.10 %

Characteristics

Density, 20 °C	0.825 g/cm ³
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Notes:

This product is suitable for several segments. Segment related PDSs are available on our website.

Applications

For Polymer Production/Poly(meth)acrylics: Polymerization of ethylene: Trigonox 21-C50 is an efficient initiator for the production of Low Density Polyethylene (LDPE). It is used both for tubular and autoclave processes. In most cases a combination with other peroxides is used to ensure a broad reactivity range. Polymerization of styrene: In suspension polymerization processes, Trigonox 21-C50 can be used for the polymerization of styrene at approximately 90°C. Trigonox 21-C50 has an activity comparable with dibenzoyl peroxide (Perkadox L-W75). Typically, Trigonox 21-C50 is used in combination with initiators such as tert-Butyl peroxybenzoate (Trigonox C). **Polymerization of acrylates and methacrylates:** Trigonox 21-C50 is an efficient initiator for the solution (co)polymerization of acrylates and methacrylates in the temperature range of 65-100°C, amongst others for the manufacture of coatings. Trigonox 21-C50 can also be applied as an initiator for the bulk and suspension (co)polymerization of acrylates and methacrylates. **For Thermoset:** Trigonox 21-C50 is a suitable initiator for the curing of unsaturated polyester, vinyl ester and acrylic thermosetting resins in the temperature range of 100 - 140°C (212 - 284°F). Trigonox 21-C50 is the classic intermediate initiator for pultrusion applications, and also finds wide use in molding compounds and cured-in-place pipe systems. The activation temperature of Trigonox 21-C50 can be lowered by the use of metal salts such as cobalt octoate.

Half-life data

The reactivity of an organic peroxide is usually given by its half-life ($t_{1/2}$) at various temperatures. For Trigonox 21-C50 in chlorobenzene half-life at other temperatures can be calculated by using the equations and constants mentioned below:

0.1 hr	at 113°C
1 hr	at 91°C
10 hr	at 72°C
Formula 1	$k_d = A \cdot e^{-E_a/RT}$
Formula 2	$t_{1/2} = (\ln 2)/k_d$
Ea	124.90 kJ/mole
A	1.54E+14 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	40°C
Emergency temperature (T_e)	35°C
Control temperature (T_c)	30°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.

Ts Max.	10°C
Ts Min.	-30°C (-25°C IBC)
Note	When stored under these recommended storage conditions, Trigonox 21-C50 will remain within the Nouryon specifications for a period of at least 3 months after delivery.

Packaging and transport

The standard packaging is a 1000 l composite Intermediate Bulk Container (IBC). Both packaging and transport meet the international regulations. For the availability of other packed quantities consult your Nouryon representative. Trigonox 21-C50 is classified as Organic peroxide type F; liquid, temperature controlled, Division 5. 2; UN 3119.

Safety and handling

Keep containers tightly closed. Store and handle Trigonox 21-C50 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 21-C50. This information should be thoroughly reviewed prior to acceptance of this product. The SDS is available at nouryon.com/sds-search.

Major decomposition products

Carbon dioxide, tert-Butanol, Heptane, 3-tert-Butoxyheptane

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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The Nouryon logo consists of a stylized orange 'N' followed by the word 'ouryon' in a lowercase, sans-serif font, all in orange.