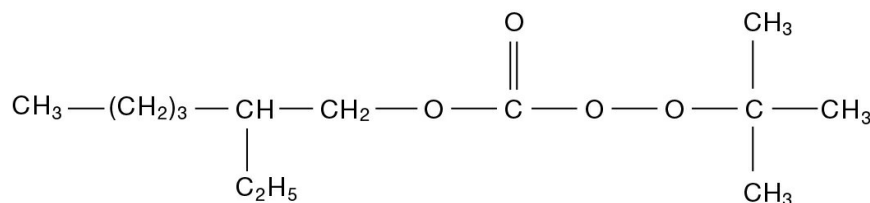


Trigonox 117

tert-Butylperoxy 2-ethylhexyl carbonate



Trigonox 117 is an initiator for (co)polymerization of ethylene, styrene and (meth)acrylates.

CAS number
34443-12-4

EINECS/ELINCS No.
252-029-5

TSCA status
listed on inventory

Molecular weight
246.3

Active oxygen content
peroxide
6.49%

Specifications

Active oxygen	≥ 6.17 %
Appearance	Clear liquid
Assay	≥ 95.0 %
Color	≤ 50 Pt-Co / APHA
Hydroperoxides as TBHP	≤ 0.10 %
Inorganic + organic hydrolysable chloride	≤ 100 mg/kg
Viscosity, 20°C	5.8 mPa.s

Characteristics

Density, 20 °C	0.930 g/cm ³
Viscosity, 20 °C	5.8 mPa.s

Applications

Polymerization of styrene: Trigonox 117 can be used as an initiator for the polymerization and copolymerization of styrene in the temperature range between 100°C and 130°C. In a mass process Trigonox 117 can be advantageously used to increase polymerization rates. In suspension polymerization processes Trigonox 117 is an efficient peroxide for reduction of residual styrene concentration during the final polymerization stage. For Crosslinking: Trigonox 117 can be used to crosslink elastomers at intermediate temperatures, a typical crosslink temperature is 150°C. Trigonox 117 is recommended for highly demanding applications e.g. as crosslinker for the ethylene vinylacetate copolymer (EVA) film in photovoltaic devices. For Thermoset: Trigonox 117 is an aliphatic percarbonate used for curing unsaturated polyester resins at elevated temperatures

Half-life data

The reactivity of an organic peroxide is usually given by its half-life ($t_{1/2}$) at various temperatures. For Trigonox 117 in chlorobenzene half-life at other temperatures can be calculated by using the equations and constants mentioned below:

0.1 hr	at 137°C (279°F)
1 hr	at 117°C (243°F)
10 hr	at 98°C (208°F)
Formula 1	$k_d = A \cdot e^{-E_a/RT}$
Formula 2	$t_{1/2} = (\ln 2)/k_d$
E_a	151.72 kJ/mole
A	$4.07E+16 \text{ s}^{-1}$
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	60°C (140°F)
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 ($T_s \text{ max.}$) for each organic peroxide product.

$T_s \text{ Max.}$	20°C (68°F)
Note	When stored according to these recommended storage conditions, Trigonox 117 will remain within the Nouryon specifications for a period of at least 3 months after delivery.

Packaging and transport

In North America Trigonox 117 is packed in non-returnable, five gallon polyethylene containers of 44.1 lb net weight. In other regions the standard packaging is a 30-liter HDPE can (Nourytainer) for 25 kg peroxide content. Both packaging and transport meet the international regulations. For the availability of other packed quantities consult your Nouryon representative. Trigonox 117 is classified as Organic peroxide type D; liquid, Division 5.2; UN 3105.

Safety and handling

Keep containers tightly closed. Store and handle Trigonox 117 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 Material Safety Data Sheet (MSDS) for further information on the safe storage, use and handling of Trigonox 117. This information should be thoroughly reviewed prior to acceptance of this product. The MSDS is available at nouryon.com/sds-search.

Major decomposition products

Carbon dioxide, tert-Butanol, 2-Ethylhexanol

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, orange, sans-serif font.