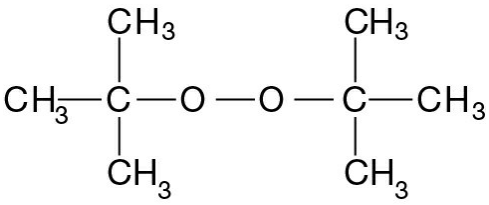
Trigonox B

Di-tert-butyl peroxide



Trigonox B is an initiator for (co)polymerization of acrylates and methacrylates.

CAS number
110-05-4

EINECS/ELINCS No.
203-733-6

TSCA status
listed on inventory

Molecular weight
146.2

Active oxygen content peroxide
10.94%

Specifications

Active oxygen	≥ 10.83 %
Assay	≥ 99.0 %
Color	≤ 30 Pt-Co / APHA
tert-Butyl hydroperoxide	≤ 0.10 %

Characteristics

Appearance	Clear liquid
Density, 20 °C	0.800 g/cm^3
Viscosity, 20 °C	0.9 mPa.s

Applications

Polymer production: Polymerization of ethylene: Trigonox B 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. For Crosslinking: Due to its high volatility, Trigonox B is mainly used for compounds that are crosslinked immediately after mixing. Trigonox B is a thermally relatively stable crosslinking peroxide. However, the high vapor pressure and the low flashpoint (+6°C) require special attention during handling and use. Trigonox B tends to build up static electricity; pumps must be ignition proof with grounded stainless steel tubing. Avoid any exposure to heat from naked fire, sunlight, steam pipes or any other source during storage. Safe processing temperature: 145°C (rheometer ts2 > 20 minutes). Typical crosslinking temperature: 180°C (rheometer t90 about 12 minutes).

Half-life data

The reactivity of an organic peroxide is usually given by its half-life (t1/2) at various temperatures. For Trigonox B in chlorobenzene half-life at other temperatures can be calculated by using the equations and constants mentioned below:

0.1 hr	at 164°C (327°F)
1 hr	at 141°C (286°F)
10 hr	at 121°C (250°F)
Formula 1	kd = A·e-Ea/RT
Formula 2	t½ = (ln2)/kd
Ea	153.46 kJ/mole
A	4.20E+15 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 may occur with a substance in the packaging as used for transport is the Self-Accelerating Decomposition Temperature (SADT). The SADT is determined on the basis of the Heat Accumulation Storage Test.

SADT	80°C (176°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 will occur over a period of time. To minimize the loss of quality, Nouryon recommends a maximum storage temperature (Ts max.) for each organic peroxide product.

Ts Max.	40°C (104°F) and
Ts Min.	-30°C (-22°F) to prevent crystallization
Note	When stored according to these recommended storage conditions, Trigonox B will remain within the Nouryon specifications for a period of at least 3 months after delivery.

Packaging and transport

In North America Trigonox B is packed in non-returnable, five gallon polyethylene containers of 30 lb net weight and steel drums of 100 or 340 lb net weight. In other regions the standard packaging is a 30-liter HDPE can (Nourytainer) for 20 kg peroxide. Delivery in a 200 l steel drum for 150 kg peroxide is also possible in a number of countries. Both packaging and transport meet the international regulations. For the availability of other packed quantities consult your Nouryon representative. Trigonox B is classified as Organic peroxide type E; liquid, Division 5. 2; UN 3107.

Safety and handling

Keep containers tightly closed. Store and handle Trigonox B 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 detailed information on the safe storage, use and handling of Trigonox B. This information should be thoroughly reviewed prior to acceptance of this product. The SDS is available at nouryon.com/sds-search.

Major decomposition products

Acetone, Methane, tert-Butanol

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