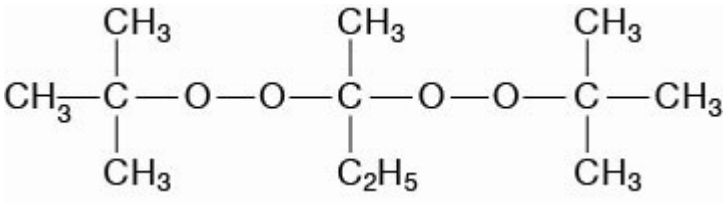
Trigonox D-C50

2,2-Di(tert-butylperoxy) butane



Trigonox D-C50 is an efficient initiator (50% active ingredient in odorless mineral spirits) for the production of Low Density Polyethylene (LDPE). It is used for both tubular and autoclave processes. In most cases a combination with other peroxides is used to ensure a broad reactivity range.

CAS number 2167-23-9	EINECS/ELINCS No. 218-507-2
TSCA status not listed on inventory	Molecular weight 234.3
Active oxygen content peroxide 13.66%	Concentration 6.69-6.97%

Specifications

Appearance	Clear colorless liquid
Assay	49.0-51.0 %
Color	≤ 20 Pt-Co / APHA
Hydroperoxides as TBHP	≤ 0.3 %
Viscosity, 20°C	2.2 mPa.s

Characteristics

Density, 20 °C	0.805 g/cm^3
Viscosity, 20 °C	2.2 mPa.s

Applications

Polymerization of styreneTrigonox D-C50 can be used for the suspension polymerization and copolymerization of styrene in the temperature range between 90°C and 130°C. During polymerization the temperature is increased in steps. A comparison is made between thermally and Trigonox D initiated (0. 08 mmole/100 g styrene) polymerization of styrene in a mass process, applying a typical temperature scheme (110-140-180°C).

Half-life data

The reactivity of an organic peroxide is usually given by its half-life (t1/2) at various temperatures. For Trigonox D-C50 in chlorobenzene half-life at other temperatures can be calculated by using the equations and constants mentioned below:

0.1 hr	at 136°C (277°F)
1 hr	at 116°C (241°F)
10 hr	at 98°C (208°F)
Formula 1	kd = A·e-Ea/RT
Formula 2	t½ = (ln2)/kd
Ea	154.08 kJ/mole
A	9.30E+16 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 (158°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 (Ts max.) for each organic peroxide.

Ts Max.	30°C (86°F)
Note	When stored according to these recommended storage conditions, Trigonox D-C50 will remain within the Nouryon specifications for a period of at least three months after delivery.

Packaging and transport

In North America Trigonox D-C50 is packed in non-returnable polyethylene containers of 30 lb net weight. In other regions the standard packaging is a 30-liter HDPE can (Nourytainer) for 20 kg peroxide solutionBoth packaging and transport meet the international regulations. For the availability of other packed quantities consult your Nouryon representative. Trigonox D-C50 is classified as Organic peroxide type C; liquid, Division 5. 2; UN 3103.

Safety and handling

Keep containers tightly closed. Store and handle Trigonox D-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 D-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

Methane, Ethane, Acetone, tert-Butanol, Carbon dioxide, 2-Methoxy-2-methylpropane

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