

Trigonox B-DF50

Di-tert-butyl peroxide, 50% solution in diesel fuel

Trigonox® B-DF50 is an initiator (50% active ingredient in diesel fuel) used to increase the cetane number of diesel fuel. It is a nitrogen free additive that is useful to meet strict environmental regulations with nitrogen limits.

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%	Concentration 5.36-5.58%

Specifications

Appearance	Clear liquid
Assay	49.0-51.0 %
Hydroperoxides as TBHP	0.05 %

Applications

Trigonox® B-DF50 is an efficient initiator to increase the cetane number of diesel fuel. It is a stable and nitrogen free additive to improve the performance of diesel engines and reduce emissions.

Half-life data

The reactivity of an organic peroxide is usually given by its half-life ($t_{1/2}$) at various temperatures. For Trigonox® B-DF50 in chlorobenzene half-life at other temperatures can be calculated by using the equations and constants mentioned below:

0.1 hr	at 164°C
1 hr	at 141°C
10 hr	at 121°C
Formula 1	$k_d = A \cdot e^{-E_a/RT}$
Formula 2	$t^{1/2} = (\ln 2)/k_d$
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	60°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 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
Note	When stored according to these recommended storage conditions, Trigonox® B-DF50 will remain within the Nouryon specifications for a period of at least 3 months after delivery.

Packaging and transport

Trigonox® B-DF50 can be supplied in bulk in Tanker Truck (TT) and Intermediate Bulk Container (IBC). Both packaging and transport meet the international regulations. For the availability of other packed quantities consult your Nouryon representative. Trigonox® B-DF50 is classified as Organic peroxide type F; liquid, Division 5. 2; UN 3109.

Safety and handling

Keep containers tightly closed. Store and handle Trigonox® B-DF50 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® B-DF50. 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

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 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.