

# Trigonox 423-CS70

1,1,3,3-Tetramethylbutyl peroxyneodecanoate

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Trigonox® 423-CS70 is an initiator (70% active ingredient in odorless mineral spirits) for (co)polymerization of ethylene, vinyl chloride and vinylidene chloride.

**CAS number**  
51240-95-0

**EINECS/ELINCS No.**  
257-077-0

**TSCA status**  
listed on inventory

**Molecular weight**  
300.5

**Active oxygen content peroxide**  
5.32%

## Specifications

Active oxygen	3.67-3.78 %
Appearance	Clear liquid
Assay	69.0-71.0 %
Color	20 Pt-Co max.
Hydroperoxides as TMBH	max. 0.3 %
Inorganic + organic hydrolysable chloride	max. 250 mg/kg

## Characteristics

Density, 0°C	0.870 g/cm <sup>3</sup>
Viscosity, 0°C	10 mPa.s

## Applications

**Polymerization of ethylene:** Trigonox® 423-CS70 can be applied for the LDPE manufacture in both autoclave and tubular processes. Trigonox® 423-CS70 is a very reactive peroxide, which can be used in combination with less reactive initiators such as tert-Butyl peroxy-pivalate (Trigonox® 25), tert-Butyl peroxybenzoate (Trigonox® C) and others. TA and Io/PE for Trigonox® 423-CS70 are expected to be similar to Cumyl peroxyneodecanoate (Trigonox® 99). **Polymerization of vinyl chloride:** Trigonox® 423-CS70 is a highly active initiator. It can be used between 40°C and 65°C. Trigonox® 423-CS70 is often combined with less reactive initiators such as peroxydicarbonates (e.g. Perkadox 16) or diacylperoxides (e.g. Laurox) to increase reactor efficiency.

## Half-life data

The reactivity of an organic peroxide is usually given by its half-life ( $t_{1/2}$ ) at various temperatures. The half-life of Trigonox® 423-C70 in chlorobenzene is:

0.1 hr	76°C (169°F)
1 hr	57°C (135°F)
10 hr	40°C (104°F)
Formula 1	$k_d = A \cdot e^{-E_a/RT}$
Formula 2	$t_{1/2} = (\ln 2)/k_d$
$E_a$	115.79 kJ/mole
A	$3.98E+14 \text{ s}^{-1}$
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	15°C (59°F)
Emergency temperature ( $T_e$ )	5°C (41°F)
Control temperature ( $T_c$ )	-5°C (23°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.

$T_s \text{ max.}$	-15°C (5°F)
Note	When stored according to these recommended storage conditions, Trigonox® 423-C70 will remain within the Nouryon specifications for a period of at least 3 months after delivery.

## Packaging and transport

The standard packaging is a 30-liter HDPE can (Nourytainer®) for 25 kg peroxide. Both packaging and transport meet the international regulations. For the availability of other packed quantities contact your Nouryon representative. Trigonox® 423-CS70 is classified as Organic peroxide type D; liquid, temperature controlled; Division 5.2; UN 3115.

## Safety and handling

This product contains a component that is classified as Toxic for Reproduction, Category 2 under the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Nouryon ensures that it consistently manages hazardous substances to ensure safe use. To that end, a full risk assessment of this product has been conducted under Nouryon's Priority Substance Program and safe use has been demonstrated throughout the supply chain. Keep containers tightly closed. Store and handle Trigonox® 423-CS70 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 (MSDS) and extended SDS (eSDS) for further information on the safe storage, use and handling of Trigonox® 423-CS70. This information should be thoroughly reviewed prior to acceptance of this product. The SDS is available at [nouryon.com/sds-search](http://nouryon.com/sds-search) and eSDS can be made available on request.

## Major decomposition products

Carbon dioxide, 2,2-Dimethylpropane, 2,4,4-Trimethyl-2-pentanol, Isomers of iso-octane

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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