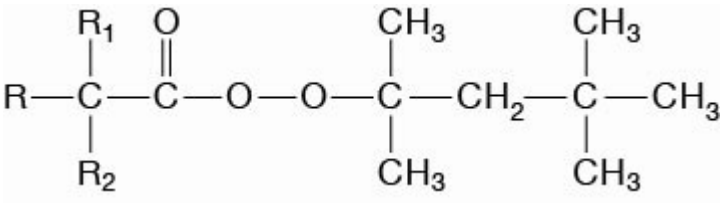
Trigonox 423-W50

1,1,3,3-Tetramethylbutyl peroxyneodecanoate



Initiator (50% water-based emulsion) for (co)polymerization of vinyl chloride and vinylidine 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

Appearance	White emulsion
Assay	49.0-51.0 %
Inorganic + organic hydrolysable chloride	max. 1000 mg/kg
Viscosity, -10 °C (Brookfield LVT, spindle #3)	max. 2000 mPa.s

Characteristics

Density, 0 °C	0.930 g/cm^3

Applications

Polymerization of vinyl chloride: Trigonox 423-W50 is a highly active initiator for the suspension polymerization of vinylchloride in the temperature range between 40°C and 65°C. Trigonox 423-W50 is often combined with less reactive initiators, such as peroxydicarbonates (e.g. Perkadox 16) or diacylperoxides (e.g. Laurox) to increase reactor efficiency. Reasons to use a water-based peroxide emulsion instead of a solvent-based peroxide are the following: enhanced safety, easy to use (pumpable) in 'closed reactor technology', easy to dilute with water

Half-life data

The reactivity of an organic peroxide is usually given by its half-life (t1/2) at various temperatures. The half-life of Trigonox 423-W50 in chlorobenzene is:

0.1 hr	76°C (169°F)
1 hr	57°C (135°F)
10 hr	40°C (104°F)
Formula 1	kd = A·e-Ea/RT
Formula 2	$t_{½}$ = (ln2)/kd
Ea	115.79 kJ/mole
A	3.98E+14 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 (Tc)	-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 (Ts max.) for each organic peroxide product.

Ts Max.	-15°C (5°F)
Ts Min.	-20°C (-4°F)
Note	When stored according to these recommended storage conditions, Trigonox 423-W50 will remain within the Nouryon specifications for a period of at least three months after delivery.

Packaging and transport

The standard packaging is a 30-liter HDPE can for 25 kg peroxide emulsion. Delivery in a 1250 l stainless steel Intermediate Bulk Container is also possible in a number of countries. Both packaging and transport meet the international regulations. For the availability of other packed quantities contact your Nouryon representative. Trigonox 423-W50 is classified as Organic peroxide type F; liquid, temperature controlled; Division 5.2; UN 3119.

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-W50 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) and extended SDS (eSDS) for further information on the safe storage, use and handling of Trigonox 423-W50. This information should be thoroughly reviewed prior to acceptance of this product. The MSDS is available at https://polymerchemistry.nouryon.com.

Major decomposition products

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

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