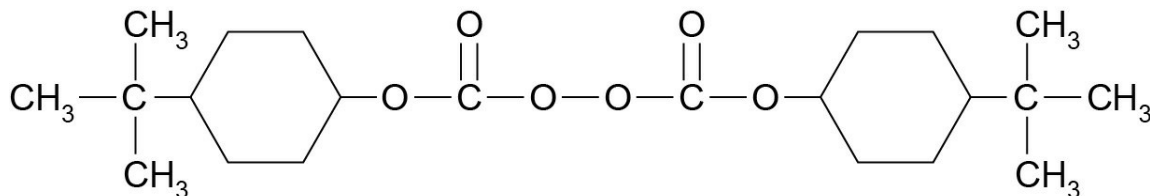


# Perkadox 16

Di(4-tert-butylcyclohexyl) peroxydicarbonate



Perkadox 16 is a solid peroxydicarbonate used for curing unsaturated polyester resins and (meth)acrylic resins in the temperature range of 60°C and higher. Ideal combination of low activation temperature and relatively high storage temperature.

CAS number  
15520-11-3

EINECS/ELINCS No.  
239-557-1

TSCA status  
listed on inventory

Molecular weight  
398.5

## Specifications

Appearance	White powder
Assay	94.0-97.0 %
Inorganic + organic hydrolysable chloride	≤ 4000 mg/kg

## Characteristics

Bulk density, 20 °C	450-480 kg/m <sup>3</sup>
Density, 20 °C	1.13 g/cm <sup>3</sup>

## Applications

**Polymer production:** Polymerization of vinyl chloride Perkadox 16 is applied as an initiator for the suspension and mass polymerization of vinyl chloride in the temperature range between 40°C and 65°C. Perkadox 16 can be used alone or in combination with other peroxides, such as 1,1,3,3-Tetramethylbutyl peroxyneodecanoate (Trigonox 423), Cumyl peroxyneodecanoate (Trigonox 99) or Dilauroyl peroxide (Laurox), to increase reactor efficiency. For Thermoset: Perkadox 16 is a solid peroxydicarbonate which is used for the curing of unsaturated polyester resins and methacrylic resins mainly in the temperature range of 60°C and higher. Perkadox 16 is not suitable for the production of clear - castings or - coatings, due to a slight haze in the end product. In this case, Perkadox 16S can be advised. Perkadox 16 shows a high reactivity at elevated temperatures, which is demonstrated by its low activation temperature, in combination with a relatively long pot life at ambient temperatures. Perkadox 16 is mostly used in combination with a low reactive peroxide to ensure a good final cure. Combinations of Perkadox 16 with e.g. Trigonox C, Trigonox 29-B50 or Trigonox 21 can therefore successfully be used for those applications where a long gel time or production time is required at room temperature in combination with a fast cure at elevated temperatures of e.g. 60-140°C. Applications area can be: pultrusion, filament winding, manufacturing of artificial marble.

## Half-life data

The reactivity of an organic peroxide is usually given by its half-life ( $t_{1/2}$ ) at various temperatures. For Perkadox 16 in chlorobenzene:

0.1 hr	82°C (180°F)
1 hr	64°C (147°F)
10 hr	48°C (118°F)
Formula 1	$k_d = A \cdot e^{-E_a/RT}$
Formula 2	$t_{1/2} = (\ln 2)/k_d$
Ea	126.39 kJ/mole
A	7.44E+15 s <sup>-1</sup>
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	40°C
Emergency temperature ( $T_e$ )	35°C
Control temperature ( $T_c$ )	30°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 can be detected over a period of time. To minimize the loss of quality, Nouryon recommends a maximum storage temperature ( $T_s$  max. ) for each organic peroxide product.

Ts Max.	20°C
Note	When stored under the recommended storage conditions, Perkadox 16 will remain within the Nouryon specifications for a period of at least 3 months after delivery.

## Packaging and transport

In North America Perkadox 16 is packed in non-returnable cartons containing 25 polyethylene bags of 1 lb net weight or 5 polyethylene bags of 5 lb net weight. In other regions the standard packaging is a cardboard box for 20 kg peroxide. Both packaging and transport meet the international regulations. For the availability of other packed quantities contact your Nouryon representative. Perkadox 16 is classified as Organic peroxide type C; solid, temperature controlled; Division 5. 2; UN 3114.

## Safety and handling

Keep containers tightly closed. Store and handle Perkadox 16 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 Perkadox 16. 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).

## Major decomposition products

Carbon dioxide, 4-tert-Butyl-cyclohexanol

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 orange 'N' followed by the word 'ouryon' in a lowercase, sans-serif font, all in orange.