

# Laurox W-40-GD4

Laurox W-40-GD4 is widely used as an initiator for the suspension polymerization of vinyl chloride.

**CAS number**  
105-74-8

**EINECS/ELINCS No.**  
203-326-3

**TSCA status**  
listed on inventory

**Molecular weight**  
398.6

**Active oxygen content peroxide**  
4.01%

**Concentration**  
1.59-1.61%

## Specifications

Appearance	White suspension, no contamination
Assay	39.5-41.0 %
Viscosity, 20°C	100-600 mPa.s

## Characteristics

Density	1.0 g/cm <sup>3</sup>
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## Applications

Polymerization of vinyl chloride. Laurox W-40-GD4 is widely used as an initiator for the suspension polymerization of vinyl chloride in the temperature range between 60°C and 80°C. In many cases Laurox W-40-GD4 is combined with a more active initiator such as a peroxydicarbonate (e.g. Trigonox EHP) to increase reactor efficiency. Reasons to use a water-based peroxide suspension instead of a solid or solvent-based peroxide are the following: enhanced safety, solvent free (no contamination of the VCM recycle stream), enhancement of PVC purity, 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 ( $t_{1/2}$ ) at various temperatures. For Laurox W-40-GD4 in chlorobenzene:

0.1 hr	at 99°C (210°F)
1 hr	at 79°C (174°F)
10 hr	at 61°C (142°F)
Formula 1	$k_d = A \cdot e^{-E_a/RT}$
Formula 2	$t_{1/2} = (\ln 2)/k_d$
Ea	123.37 kJ/mole
A	3.92E+14 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	50°C (122°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 ( $T_s$  max.) for each organic peroxide product.

Ts Max.	20°C (68°F)
Ts Min.	0°C (32°F) to prevent freezing
Note	When stored under these recommended storage conditions, Laurox W-40-GD4 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 (Nourytainer) for 25 kg peroxide suspension. Delivery in a 950 kg PE 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. Laurox W-40-GD4 is classified as Organic peroxide type F; liquid, Division 5.2; UN 3109.

## Safety and handling

Keep containers tightly closed. Store and handle Laurox W-40-GD4 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) for further information on the safe storage, use and handling of Laurox W-40-GD4. This information should be thoroughly reviewed prior to acceptance of this product. The MSDS is available at [nouryon.com/sds-search](http://nouryon.com/sds-search).

## Major decomposition products

Carbon dioxide, Docosane, Undecane, Undecyl dodecanoate

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.