Technical Data Sheet

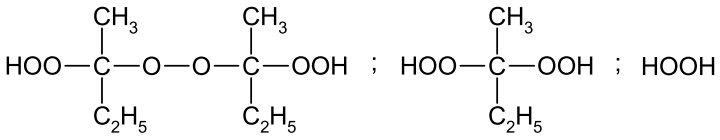
Curing Agents

DISHA ORGANIC PEROXIDES

DOPEROX M50

Product description

Methyl ethyl ketone peroxide, solution in dimethyl phthalate



CAS No.	: 1338-23-4
EINECS/ELINCS No.	: 215-661-2
TSCA status	: listed on inventory

Specifications

Appearance	: Clear and colorless liquid
Total active oxygen	: 8.8-9.0%

Characteristics

Density, 20°C	: 1.180 g/cm^3
Viscosity, 20°C	: 24 mPa.s
Water content	: max. 3.0%

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, We recommend a maximum storage temperature (T_s max.) for each organic peroxide product.

For DOPEROX M50 T_s max. = 25°C

When stored under the recommended storage conditions, *DOPEROX* M50 will remain within our specifications for a period of at least one year after delivery.

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.

For DOPEROX M50 SADT : 60°C

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).

Major decomposition products

Carbon dioxide, Water, Acetic acid, Formic acid, Propanoic acid, Methyl ethyl ketone

DOPEROX M50

Packaging and transport

The standard packaging is a 30 KG HDPE can for peroxide solution.

In Asia Pacific the standard packaging is a 30 l HDPE can for 20 kg peroxide solution.

Both packaging and transport meet the international regulations. For the availability of other packed quantities contact our representative.

DOPEROX M50 is classified as Organic peroxide type D; liquid; Division 5.2; UN 3105; PG II.

Safety and handling

Keep containers tightly closed. Store and handle DOPEROX M50 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 DOPEROX M50. This information should be thoroughly reviewed prior to acceptance of this product.
The MSDS is available at www.dishaorganicperoxides.com.

Applications

DOPEROX M50 is a general purpose methyl ethyl ketone peroxide (MEKP) for the curing of unsaturated polyester resins in the presence of a cobalt accelerator at room and elevated temperatures.

The curing system DOPEROX M50/cobalt accelerator is particularly suitable for the curing of gelcoat resins, laminating resins, lacquers and castings; moreover the manufacture of light resistant parts may be possible contrary to the curing system benzoyl peroxide/amine accelerator.

Practical experience throughout many years has proven that by the guaranteed low water content and the absence of polar compounds in DOPEROX M50, this peroxide is very suitable in GRP products for e.g. marine applications.

For room temperature application it is necessary to use DOPEROX M50 together with a cobalt accelerator.

Dosing

Depending on working conditions, the following peroxide and accelerator dosage levels are recommended:

DoPerox M50	1 - 4 phr*
Accelerator	0.5 - 3 phr

* phr = parts per hundred resin

Cure Characteristics

In a high reactive standard orthophthalic resin in combination with Accelerator NL-49P (= 1% cobalt) the following application characteristics were determined:

Gel times at 20°C

2 phr DOPEROX M50 + 0.5 phr Accelerator	12 minutes
2 phr DOPEROX M50 + 1.0 phr Accelerator	7 minutes

Cure of 1 mm pure resin layer at 20°C

The speed of cure is expressed as the time to reach a Persoz hardness of respectively 30, 60 and 120 s.

	Persoz: 30	60	120 s
2 phr DOPEROX M50 + 0.5 phr Accelerator	2.4	4.1	13 h
2 phr DOPEROX M50 + 1.0 phr Accelerator	1.7	3.0	9.5 h

Cure of 4 mm laminates at 20°C

4 mm laminates have been made with a 450 g/m^2 glass chopped strand mat. The glass content in the laminates is 30% (w/w).

The following parameters were determined:
- Time-temperature curve.
- Speed of cure expressed as the time to achieve a Barcol hardness (934-1) of 0-5 and 25-30 respectively.
- Residual styrene content after 24 h at 20°C and a subsequent postcure of 8 h at 80°C.

	Gel time (min.)	Time to peak (min.)	Peak exotherm (°C)
2 phr DOPEROX M50 + 0.5 phr Accelerator	13	36	44
2 phr DOPEROX M50 + 1.0 phr Accelerator	8	26	64

	Barcol 0-5 (h)	Barcol 25-30 (h)	Res. styrene 24 h (%)	Res. styrene + 8 h (%)
20°C 80°C				
2 phr DOPEROX M50 + 0.5 phr Accelerator	3	15	6	0.3
2 phr DOPEROX M50 + 1.0 phr Accelerator		1	5	0.1

* phr = parts per hundred resin

Pot life at 20°C

Pot lives were determined of a mixture of DOPEROX M50 and a non-preaccelerated UP resin at 20°C.

2 phr DOPEROX M50	12 h
4 phr DOPEROX M50	7 h

Solubility DOPEROX M50 is miscible with phthalates and slightly miscible with water.

Colors DOPEROX M50 is available in the colors blue, yellow-A, red-YM and red-YM 1/6.

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