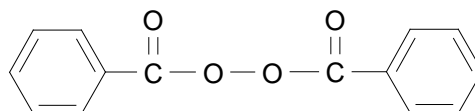




Perkadox[®] L-40 RPS

Product description

Dibenzoyl peroxide, 40% suspension in solvent mixture



Molecular weight	: 242.2
Active oxygen content peroxide	: 6.61%
actual product	: 2.58-2.71%
CAS No.	: 94-36-0; 78-40-0
EINECS/ELINCS No.	: 202-327-6; 201-114-5
TSCA status	: listed on inventory

Specifications

Appearance	: White suspension
Assay	: 39.0-41.0%

Characteristics

Density, 20°C	: 1.175 g/cm ³
Viscosity, 20°C	: 400-500 mPa.s (Ericksen)
Viscosity, 20°C	: 25 s (Din Cup 6 mm)

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, AkzoNobel recommends a maximum storage temperature (T_s max.) for each organic peroxide product.

For *Perkadox* L-40 RPS T_s max. = 25°C

When stored under these recommended storage conditions, *Perkadox* L-40 RPS will remain within the AkzoNobel specifications for a period of at least 6 months 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 <i>Perkadox</i> L-40 RPS	SADT	: 50°C
	Emergency temperature (T_{em})	: 45°C
	Control temperature (T_c)	: 40°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, benzoic acid, benzene, diphenyl, phenylbenzoate

Packaging and transport

The standard packaging is a 30 l HDPE can (Nourytainer[®]) for 20 kg peroxide formulation.

Both packaging and transport meet the international regulations. For the availability of other packed quantities consult your AkzoNobel representative.

Perkadox L-40 RPS is classified as Organic peroxide type F, liquid, Division 5.2; UN 3109.

Safety and handling

Keep containers tightly closed. Store and handle *Perkadox* L-40 RPS 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 *Perkadox* L-40 RPS. This information should be thoroughly reviewed prior to acceptance of this product.

Applications

Perkadox L-40 RPS is a pumpable, sprayable easy dispersing form of dibenzoyl peroxide for the curing of unsaturated polyester resins at ambient and elevated temperatures. At cure-temperatures up to 80°C, *Perkadox* L-40 RPS should be used in combination with an aromatic tertiary amine accelerator, above 80°C the use of an accelerator is not required.

Perkadox L-40 RPS can be pumped through internal and external mix FRP spray equipment and poured or metered by volume, *Perkadox* L-40 RPS is easier to use and handle than conventional dibenzoyl peroxide pastes or dispersions. The low water content of *Perkadox* L-40 RPS allows for use in all FRP applications.

The curing system *Perkadox* L-40 RPS/amine accelerator shows a very fast cure, which is hardly influenced by humidity and fillers. Even at low temperatures a relatively good cure will be obtained. A disadvantage may be the yellow color and poor light resistance of the molded product.

For ambient temperature curing the following amine accelerators are available to adjust the gel time and speed of cure of the cure system based on *Perkadox* L-40 RPS:

- Accelerator NL-65-100 (N,N-Dimethyl-p-toluidine) for short gel times
- Accelerator NL-63-100 (N,N-Dimethylaniline) for medium gel times
- Accelerator NL-64-100 (N,N-Diethylaniline) for long gel times

Dosing

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

Perkadox L-40 RPS 2.5 - 6 phr*
Amine accelerator 0.05 - 0.5 phr

Cure Characteristics

In a high reactive standard orthophthalic polyester resin the following application characteristics were determined:

Gel times at 20°C

UP resin	100	100	100	100	100	100	100
<i>Perkadox</i> L-40 RPS	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Acc. NL-63-100	0.1	0.4					
Acc. NL-64-100			0.1	0.5			
Acc. NL-65-100					0.05	0.1	0.4
Gel time (minutes)	22	6	160	20	20	5	1

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
3.8 phr <i>Perkadox</i> L-40 RPS + 0.1 phr Acc. NL-63-100		0.5	0.8	2	h
3.8 phr <i>Perkadox</i> L-40 RPS + 0.4 phr Acc. NL-63-100				<0.5	h
3.8 phr <i>Perkadox</i> L-40 RPS + 0.5 phr Acc. NL-64-100			0.5	1	h
3.8 phr <i>Perkadox</i> L-40 RPS + 0.05 phr Acc. NL-65-100		1	2.5	14	h
3.8 phr <i>Perkadox</i> L-40 RPS + 0.1 phr Acc. NL-65-100				0.5	h

Cure of 4 mm laminates at 20°C

4 mm laminates have been made with a 450 g/m² 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
3.8 phr <i>Perkadox</i> L-40 RPS + 0.1 phr Acc. NL-63-100	24	31	99
3.8 phr <i>Perkadox</i> L-40 RPS + 0.5 phr Acc. NL-64-100	21	26	140
3.8 phr <i>Perkadox</i> L-40 RPS + 0.05 phr Acc. NL-65-100	28	35	64

* phr = parts per hundred resin

	Barcol		Res. styrene	
	0-5 h	25-30 h	24 h 20°C %	+ 8 h 80°C %
3.8 phr <i>Perkadox</i> L-40 RPS + 0.1 phr Acc.NL-63-100			<1	3.2
3.8 phr <i>Perkadox</i> L-40 RPS + 0.5 phr Acc.NL-64-100			<1	2.9
3.8 phr <i>Perkadox</i> L-40 RPS + 0.05 phr Acc.NL-65-100	1	8.5	6.6	0.8

Pot life at 20°C

Pot lives were determined of a mixture of *Perkadox* L-40 RPS and a non-preaccelerated UP resin at 20°C.

2.0 phr <i>Perkadox</i> L-40 RPS	38 days
3.8 phr <i>Perkadox</i> L-40 RPS	20 days

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