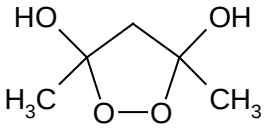
AKZO NOBEL

POLYMER CHEMICALS

Trigonox® 44B

Product description

Acetylacetone peroxide in solvents



; HOOH

Peroxide content	:	33%
Balance	:	67% diethylene glycol + water + diacetone alcohol
CAS No.	:	37187-22-7; 123-42-2; 11-46-6
Einecs	:	2533849; 2046267; 2038722
TSCA	:	registered

Specification

Appearance	:	clear liquid
Color	:	50 Pt-Co max.
Total Active Oxygen	:	4.0-4.2%

Physical properties

Density, 20°C	:	1055 kg/m^3
Viscosity, 20°C	:	21 mPa.s

Safety characteristics

Flashpoint	:	above SADT*
SADT	:	60°C
Auto ignition temperature	:	>380°C

Solubility

Soluble in water and alcohols.

Hazardous reactions

Oxidizing agent. Decomposes violently under the influence of heat or by contact with reducing agents. Never mix with accelerators.

Major decomposition products

Carbon dioxide, acetyl acetone, mixture of aliphatic acids, water.

Toxicological data

LD 50, acute oral (rat)	:	>2000 mg/kg
Primary skin irritation	:	Non irritating
Eye irritation	:	Moderately irritating Irritating to eyes

Packaging

Standard packaging size for Trigonox 44B is 30 kg net.
Smaller packaging size is available on request.

*SADT = Self Accelerating Decomposition Temperature

Application

Trigonox 44B is an acetyl acetone peroxide formulation for the curing of unsaturated polyester resins in the presence of a cobalt accelerator at room and elevated temperatures.

With the curing system Trigonox 44B/cobalt accelerator a much faster speed of cure may be achieved than with curing systems based on a MEKP plus cobalt accelerator, at room and elevated temperatures. Normally the gel times with Trigonox 44B are comparable to those with Butanox® M-50.

Trigonox 44B is particularly suitable in those applications where a fast mould-turnover is required, e.g. for the cold press moulding or resin injection moulding techniques.

The system Trigonox 44B/cobalt accelerator will give a higher peak exotherm than a standard MEKP/cobalt accelerator system. Due to this fact, is it recommendable to avoid the production of too thick laminates in one operation. At low temperatures a reasonable speed of cure is still obtained when Trigonox 44B is used in combination with large amounts of cobalt accelerator possibly in combination with Accelerator NL-63-100 (N,N-Dimethylaniline) as promotor.

Dosage

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

Trigonox 44B	1 - 2 phr *
Accelerator NL-49P	0.5 - 3 phr

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 Trigonox 44B + 0.5 phr Acc. NL-49P	15 minutes
2 phr Butanox M-50 + 0.5 phr Acc. NL-49P	12 minutes
2 phr Trigonox 44B + 1.0 phr Acc. NL-49P	8 minutes
2 phr Butanox M-50 + 1.0 phr Acc. NL-49P	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 Trigonox 44B + 0.5 phr Acc. NL-49P	< 1	1.5	5	h
2 phr Butanox M-50 + 0.5 phr Acc. NL-49P	2.4	4.1	13	h
2 phr Trigonox 44B + 1.0 phr Acc. NL-49P	<<1	1	4	h
2 phr Butanox M-50 + 1.0 phr Acc. NL-49P	1.7	3	10	h

* phr = parts per hundred resin

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 25-30.
- 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 Trigonox 44B + 0.5 phr Acc. NL-49P	15	28	67
2 phr Butanox M-50 + 0.5 phr Acc. NL-49P	13	36	44
2 phr Trigonox 44B + 1.0 phr Acc. NL-49P	8	18	97
2 phr Butanox M-50 + 1.0 phr Acc. NL-49P	8	26	64

	Barcol 25-30	Res. styrene 24 h 20°C	+ 8 h 80°C
	h	%	%
2 phr Trigonox 44B + 0.5 phr Acc. NL-49P	<1	4.4	0.1
2 phr Butanox M-50 + 0.5 phr Acc. NL-49P	15	6	0.3
2 phr Trigonox 44B + 1.0 phr Acc. NL-49P	<<1	0.9	0.2
2 phr Butanox M-50 + 1.0 phr Acc. NL-49P	1	5	0.1

Pot life at 20°C

Pot lives were determined of a mixture of Trigonox 44B and a non-preaccelerated UP resin at 20°C.

2 phr Trigonox 44B	20 h
4 phr Trigonox 44B	11 h

Recommended Handling Procedures and First Aid

Protective equipment and handling instructions	- Use safety goggles or face shield and gloves. - Extra ventilation recommended. - Use clean equipment and tools of inert material, such as stainless steel, polyethylene, glass. - All equipment should be earthed. - Do not pipet by mouth. - Avoid contact with rust. - Never bring peroxide into direct contact with accelerators. - Never weigh out in the storage room
Storage conditions	Keep container tightly closed in a well ventilated place. Temperature max. +25°C. Keep away from reducing agents e.g. amines, acids, alkalis, heavy metal compounds (e.g. accelerators, driers, metal soaps). Never weigh out in the storage room.
Storage stability	Only when stored under these recommended storage conditions, the product will remain within the Akzo Nobel specifications for a period of at least three months after delivery.
Fire fighting	Extinguish a small fire with powder or carbon dioxide; then apply water to prevent re-ignition. Extinguish a big fire with large amounts of water, applied from a safe distance.
Spillage	Mix with e.g. vermiculite. Sweep up with dustpan and brush of inert material, flush the remainder with water. Remove the waste to a safe place. The waste should NOT be confined.
Disposal	According to local regulations.
Spillage on clothes	Remove contaminated clothes. Examine skin. If skin contact, wash or shower; apply a lanolin-based ointment. Launder clothes normally.
Eye contact	Rinse with plenty of water for at least 15 minutes. Seek medical advice.
Skin contact	Wash with plenty of water (and soap) or shower, afterwards apply a lanolin-based ointment. Seek medical advice.
Ingestion	Rinse mouth. Give water to drink. Seek medical advice. Do NOT induce vomiting.
Inhalation	Move to fresh air, rest, half-upright position. Loosen clothing. Seek medical advice.

For more detailed information reference can be made to the SDS of this product.

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