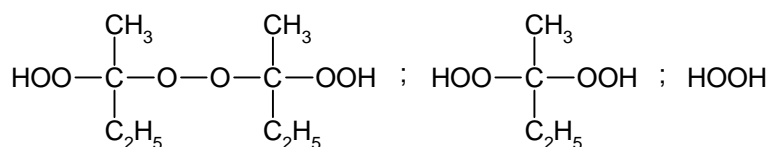




## Butanox<sup>®</sup> LA

### Product description

Methyl ethyl ketone peroxide in dimethyl phthalate



Peroxide content	: 34.5%
Balance	: 61% DMP + DIP, 4.5% MEK + water
CAS No.	: 1338-23-4; 131-11-3; 78-93-3; 84-69-5
Einecs	: 2156612; 2050116; 2011590; 2015532
TSCA	: registered

### Specification

Appearance	: clear and colorless liquid
Total active Oxygen	: 8.5-8.8%

### Physical properties

Density, 20°C	: 1085 kg/m <sup>3</sup>
Viscosity, 20°C	: 25 mPa.s

### Safety characteristics

Flash point	: above the SADT*
SADT	: 60°C
Auto ignition temperature	: not determined

### Solubility

Insoluble in water. Soluble in phthalates.

### 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, water, acetic acid, formic acid, propionic acid, methyl ethyl ketone.

### Toxicological Data

LD 50, acute oral (rat)	: 1017 mg/kg (MEKP-40%)
LD 50, acute inhalation (rat)	: 17 mg/l (4 hours exposure) (MEKP-40%)
Primary skin irritation	: Corrosive (MEKP-33%)
Eye irritation	: Severely irritating/corrosive (MEKP-33%)
Ames test	: Not mutagenic

### Packaging

Standard packaging size for Butanox LA is 30 kg net.  
Smaller packaging size available on request.

\* SADT = Self Accelerating Decomposition Temperature

## Applications

Butanox LA is a 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 Butanox LA/cobalt accelerator is particularly suitable for the curing of gelcoat resins, laminating resins and lacquers when a longer gel time is required than can be obtained with a standard MEKP. 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 Butanox LA, this peroxide is very suitable in GRP products for e.g. marine applications. Because the Butanox LA has a low hydrogen peroxide content, this peroxide can very successfully be used for the cure of those gelcoats which tend to microporosity caused by the decomposition of the hydrogen peroxide.

For room temperature application it is necessary to use Butanox LA together with a cobalt accelerator (e.g. Accelerator NL-49P).

## Dosage

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

Butanox LA	1 - 4 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 Butanox LA + 0.5 phr Acc. NL-49P	22 minutes
2 phr Butanox M-50 + 0.5 phr Acc. NL-49P	12 minutes
2 phr Butanox LA + 1.0 phr Acc. NL-49P	13 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 Butanox LA + 0.5 phr Acc. NL-49P	3.2	5.5	16	h
2 phr Butanox M-50 + 0.5 phr Acc. NL-49P	2.4	4.1	13	h
2 phr Butanox LA + 1.0 phr Acc. NL-49P	2.3	4.0	12	h
2 phr Butanox M-50 + 1.0 phr Acc. NL-49P	1.7	3.0	9.5	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<sup>2</sup> 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 Butanox LA + 0.5 phr Acc. NL-49P	28	60	34
2 phr Butanox M-50 + 0.5 phr Acc. NL-49P	13	36	44
2 phr Butanox LA + 1.0 phr Acc. NL-49P	16	42	46
2 phr Butanox M-50 + 1.0 phr Acc. NL-49P	8	26	64

	Barcol 0-5 h	Barcol 25-30 h	Res. styrene 24 h 20°C %	Res. styrene + 8 h 80°C %
2 phr Butanox LA + 0.5 phr Acc. NL-49P	5	27	6	0.2
2 phr Butanox M-50 + 0.5 phr Acc. NL-49P	3	15	6	0.3
2 phr Butanox LA + 1.0 phr Acc. NL-49P	1.2	8	5.7	0.1
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 Butanox LA and a non-preaccelerated UP resin at 20°C.

2 phr Butanox LA	14 h
4 phr Butanox LA	8 h

### Colors

Butanox LA is available in the colors yellow and red-YM.

Butanox is a registered trademark of Akzo Nobel Chemicals bv.

## Recommended Handling Procedures and First Aid

<b>Protective equipment and handling instructions</b>	<ul style="list-style-type: none"><li>- Use safety goggles or face shield and gloves.</li><li>- Extra ventilation recommended.</li><li>- Use clean equipment and tools of inert material, such as stainless steel, polyethylene, glass.</li><li>- All equipment should be earthed.</li><li>- Do not pipet by mouth.</li><li>- Avoid contact with rust.</li><li>- Never bring peroxide into direct contact with accelerators.</li><li>- Never weigh out in the storage room.</li></ul>
<b>Storage conditions</b>	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.
<b>Storage stability</b>	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.
<b>Fire fighting</b>	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.
<b>Spillage</b>	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.
<b>Disposal</b>	According to local regulations.
<b>Spillage on clothes</b>	Remove contaminated clothes. Examine skin. If skin contact, wash or shower; apply a lanolin-based ointment. Launder clothes normally.
<b>Eye contact</b>	Rinse with plenty of water for at least 15 minutes. Seek medical advice.
<b>Skin contact</b>	Wash with plenty of water (and soap) or shower, afterwards apply a lanolin-based ointment. Seek medical advice.
<b>Ingestion</b>	Rinse mouth. Give water to drink. Seek medical advice. Do NOT induce vomiting.
<b>Inhalation</b>	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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