

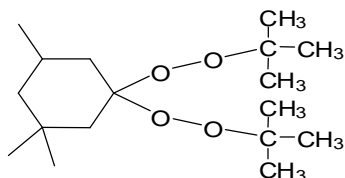
## TMCH-HA-M1

1,1- Bis(tert.butylperoxy)3,3,5-trimethyl cyclohexane

CAS#6731-36-8

Liquid mixture, high activity

### Structural Formula



### Description

Colourless, mobile liquid, consisting of a peroxide mixture based on 1,1-bis(tert.butylperoxy)3,3,5-trimethyl cyclohexane, desensitised with aliphatic hydrocarbons. This product is used as an initiator (radical source) in the curing of unsaturated polyester resins at above 80°C. Main application: hot press moulding of SMC or BMC at 120°C.

### Technical Data

Appearance	colourless liquid
Active oxygen	approx. 5.75 % w/w
De-sensitising agent	aliphatics (b.p. >170°C)
Density at 20°C	approx. 0.84 g/cm <sup>3</sup>
Viscosity at 20°C	approx. 3 mPa•s
Refractive index at 20°C	approx. 1.429
Miscibility	immiscible with water miscible with alcohols and aliphatics
Critical temperature (SADT)	approx. 55 °C
Cold storage stability	to below -25 °C
Kick-off temperature	approx. 75 °C
Recommended storage temperature	below 20 °C
Maintenance of activity as from date of delivery	3 months

This product is in compliance with the ElektroG (EU-Directives: RoHS 2002/95/E G, WEEE 2002/96/EG)

### Application

#### POLYESTER CURING:

Curing agent for UP resins. Temperature range: 80-150 C. Dosage level: 1-3% as supplied. "Shelf life" (gel time of resin + peroxide) at ambient temperature several days or weeks. Sensitive to certain fillers, pigments and promoters. Shelf life can be prolonged considerably by adding 0.1-0.3% Inhibitor BC 500.

### CURING CHARACTERISTICS:

In the range of 70-80°C ("kick-off" temperature) the curing rate is not very high, unless there is a reaction exotherm (e.g. within a heat-retaining mould). Really short cure times of 1-3 minutes can be achieved only above 120°C. The optimum temperature range for hot press moulding is therefore 120-150°C.

### PROCESSING METHODS:

Mainly hot press moulding of sheet moulding compounds (SMC) or bulk moulding compounds (BMC), wet press moulding at 120°C, continuous impregnating (profiles, paper laminates), dipping (wire windings).

## Measurements

### Activity

Influence of temperature and peroxide dosage<sup>1)</sup> on curing performance and degree of cure. Hot press moulding of 16 mm thick SMC pellets and 3 mm thick SMC sheets.

Temperature of mould	120°C	120°C	130°C	130°C	140°C	140°C	150°C	150°C
Formulation (parts of weight)								
Standard SMC (resin proportion)	100	100	100	100	100	100	100	100
TMCH-HA-M1	1.4	2.8	1.4	2.8	1.4	2.8	1.4	2.8
Curing performance (SMC pellets)								
Flow time (min)	1.55	1.35	1.10	0.90	0.70	0.65	0.60	0.50
Time to peak tmax (min)	2.05	1.70	1.50	1.30	1.40	1.20	1.15	1.00
Degree of cure (SMC sheets <sup>2)</sup> )								
Barcol (934) hardness	7	11	21	24	18	22	18	25
Residual styrene content (%)	2.6	2.1	1.2	0.9	0.7	0.7	0.3	0.1

<sup>1)</sup> The amounts added are equivalent to 1% or 2% w/w techn. pure t-butyl perbenzoate

<sup>2)</sup> The press cycles for the SMC sheets are equal to the tmax. of the corresponding SMC pellets.

Further information on suitable curing agents for unsaturated polyester resins is given in our application brochures.

## Packaging

Standard packaging of TMCH-HA-M1 is 20 kg.

## Disclaimer

This information and all further technical advice are reflecting our present knowledge and experience based on internal tests with local raw materials with the purpose to inform about our products and applications. The information should not be construed as guaranteeing specific properties of products described or their suitability for a particular application, nor as providing complete instructions for use. The information implies no guarantee for product and shelf life properties, nor any liability or other legal responsibility on our part, including with regard to existing third party intellectual property rights, especially patent rights. We reserve the right to make any changes according to technological progress or further developments.

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Revision number: 1.0. Date: 01.07.14. Device M: TDS.