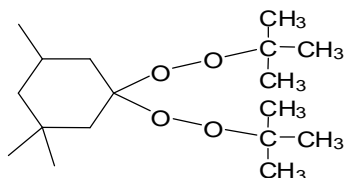


TMCH-50-AL

1,1- Bis(tert.butylperoxy)3,3,5-trimethyl cyclohexane
CAS#6731-36-8
50% Solution in aliphatics

Structural Formula



Description

Colourless, mobile liquid, consisting of 50% w/w 1,1-bis(tert.butylperoxy)3,3,5-trimethyl cyclohexane, desensitised with aliphatic hydrocarbons. This cycloaliphatic perketal is used as an initiator (radical source) in the curing of unsaturated polyester resins. Main application: hot press moulding of SMC or BMC in the range of 130-160°C.

Technical Data

Appearance	colourless liquid
Peroxide content	approx. 50 % w/w
Active oxygen	approx. 5.29 % w/w
De-sensitising agent	aliphatics (b.p. >170°C)
Density at 20°C	approx. 0.83 g/cm ³
Viscosity at 20°C	approx. 3 mPa•s
Refractive index at 20°C	approx. 1.429
Miscibility	immiscible with water miscible with alcohols and styrene
Critical temperature (SADT)	approx. 70 °C
Cold storage stability	to below -25 °C
Kick-off temperature	approx. 75 °C
Recommended storage temperature	below 30 °C
Maintenance of activity as from date of delivery	6 months

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

Half-life Data

10h/1h/1min (0.1 m / isododecane): 95/114/155 °C

Application

POLYESTER CURING:

Curing agent for UP resins. Temperature range: 120-160 C. Usage level: 1-3% as supplied. "Shelf life" (gel time of resin + peroxide) several weeks at ambient temperature. Hardly sensitive to fillers and pigments as well as cobalt salts and

tertiary amines. 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, if the reaction heat does not cause temperature rise (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 130-160°C.

PROCESSING METHODS:

Mainly hot press moulding of sheet moulding compounds (SMC) and bulk moulding compounds (BMC).

Measurements

Activity

Influence of temperature and peroxide dosage¹⁾ 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	130°C	130°C	140°C	140°C	150°C	150°C	160°C	160°C
Formulation (parts of weight)								
Standard SMC (resin proportion)	100	100	100	100	100	100	100	100
TMCH-50-AL	1.5	3.0	1.5	3.0	1.5	3.0	1.5	3.0
Curing performance (SMC pellets)								
Time to start of reaction t' (min)	1.45	1.25	1.05	0.95	0.90	0.80	0.75	0.65
Time to peak t _{max} (min)	2.45	2.15	1.95	1.75	1.50	1.30	1.30	1.20
Temp. at start of reaction TR (°C)	108	105	108	105	107	104	110	108
Peak exotherm T _{max} (°C)	167	168	171	170	177	176	179	180
Degree of cure (SMC sheets ²)								
Barcol (934) hardness	10	15	25	25	25	25	30	30
Residual styrene content (%)	3.0	2.4	0.8	0.6	0.7	0.3	0.2	0.1

- 1) The amounts added are equivalent to 1% or 2% w/w techn. pure t-butyl perbenzoate
- 2) 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-50-AL 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.

Application and usage of our products based on our technical advice is out of our control and sole responsibility of the user. The user is not released from the obligation to conduct careful inspection and testing of incoming goods in order to verify the suitability for the intended application.

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