

NOROX[®] 425

tert-Butylperoxy-3,5,5-trimethylhexanoate
CAS#13122-18-4
Liquid, techn. pure

Structural Formula

Description

Colourless, mobile liquid, consisting of technically pure tert.butylperoxy-3,5,5-trimethylhexanoate (tert.butylperisononanoate). This branched, aliphatic perester is used as an initiator (radical source) in the polymerisation of monomers (e.g. ethylene, styrene).

Technical Data

Appearance	colourless liquid
Peroxide content	ca. 99 % w/w
Active oxygen	ca. 6.88 % w/w
De-sensitising agent	none
Density at 20 °C	ca. 0.89 g/cm ³
Viscosity at 20 °C	ca. 5.0 mPa•s
Refractive index at 20 °C	ca. 1.431
Miscibility	immiscible with water miscible with alcohols, phthalate
Critical temperature (SADT)	ca. 60 °C
Cold storage stability	to below -25 °C
Kick-off temperature	ca. 80 °C
Recommended storage temperature	below 30 °C
Required storage temperature	below 30 °C
Maintenance of activity	3 months

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

Half-life Data

10h/1h/1min (0.1 m / benzene): 100/119/160 °C

Application

POLYESTER CURING:

Curing agent for UP resins. Suitable for all resin types. Temperature range: 130-160°C. Usage level: 1-2% as supplied. "Shelf life" (gel time of resin + peroxide) several months at ambient temperature, depending on resin type. Sensitive to some fillers and pigments as well as to cobalt salts or tertiary aromatic amines. Shelf life can be prolonged considerably by adding 0.1-0.3% Inhibitor BC 500.

CURING CHARACTERISTICS:

In the range of 85-95 °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 130-160 °C.

PROCESSING METHODS:

Mainly hot press moulding of sheet moulding compounds (SMC) or bulk moulding compounds (BMC), as well as impregnation, dipping of wire windings.

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
Norox® 425	1.16	2.32	1.16	2.32	1.16	2.32	1.16	2.32
Curing performance (SMC pellets)								
Time to start of reaction tr (min)	1.40	1.20	1.00	0.95	0.90	0.75	0.70	0.65
Time to peak tmax (min)	2.60	2.10	1.55	1.80	1.50	1.30	1.25	1.15
Temp. at start of reaction Tr (°C)	103	101	107	104	108	103	110	107
Peak exotherm Tmax (°C)	170	172	173	173	178	177	182	180
Degree of cure (SMC sheets ²⁾)								
Barcol (934) hardness	20	20	25	25	30	30	30	30
Residual styrene content (%)	2.5	1.7	1.0	0.8	0.6	0.4	0.1	0.1

1) The amounts added are equivalent to 1% or 2% w/w techn. pure t-butylperbenzoate

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 on this subject.

Packaging

The standard packaging of Norox 425 is 25 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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