

Technical Data Sheet (TDS)

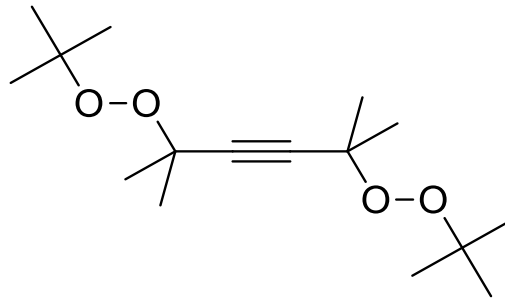
DYBP-85-WO
Crosslinking (XL)



DYBP-85-WO

2,5-Dimethyl-2,5-di(*tert*-butylperoxy) hexine-3
CAS#1068-27-5
Yellowish liquid

Structural Formula



Description

Yellowish liquid, consisting of 2,5-dimethyl-2,5-di(*tert*-butylperoxy) hexine-3 desensitised with white oil. This bifunctional dialkyl peroxide is used as a radical initiator in the crosslinking of polyethylene above 180 °C.

Technical Data

Appearance	yellowish liquid
Desensitising agent	white oil
Assay	approx. 83 % w/w
Density at 20 °C	approx. 0.88 g/cm ³
Viscosity at 20 °C	approx. 11 mPa·s
Refractive index at 20 °C	approx. 1.436
Flash point	approx. 69 °C
Critical temperature (SADT)	approx. 90 °C
Cold storage stability	freezing point below 0 °C
Recommended storage temperature	< 40 °C ●
Storage stability as from date of delivery	12 months

Standard Packaging

15 kg (33 lbs) in HDPE canisters

Half-life Data

10 h / 1 h / 1 min (benzene, 0.1 mol/L) 128 °C / 149 °C / 195 °C

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Application

POLYMER-CROSSLINKING:

Crosslinking agent for polyethylene (HDPE, LLDPE and LDPE with carbon black)

Crosslinking temperature: above 180 °C; Below 150 °C no pre-crosslinking (scorch) occurs.

Usage level: 0.2 - 2 % (w/w) of product as supplied on material to be cross-linked.

Special advantages: The DYBP-85-WO is thermally stable, not much volatile, and very efficient. The decomposition products are volatile and the final product is odour-free.

Decomposition Products

Possible detectable decomposition products: *tert*-butyl alcohol, acetone, methane, 3-hexyne-2,5-dione

Storage

Avoid any source of heat, light, humidity and protect the product from impurities. Keep within safe temperature limits.

Measurements

Table 1. Influence of peroxide level on degree of polyethylene crosslinking (temperature: 200 °C).

DYBP active oxygen [% w/w]	0.03	0.06	0.09	0.12	0.15
DYBP assay [% w/w]	0.33	0.65	0.98	1.30	1.63
Crosslinking time t_{90} [min]	6.5	5.1	5.0	4.6	4.1
Torque M_{max} [Nm]	6.1	8.8	9.8	11	12
*) Gel content [%]	91	98	99	99	99
*) Swelling index	6.5	4.3	3.5	3.1	2.9

*) Determined by extraction in xylene for 6 h at 135 °C.

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Table 2. Influence of the temperature on crosslinking time (0.65 % DYBP-85-WO). Crosslinking of HDPE (Lupolen 4261A) within Monsanto Rheometer 100-S (torsion angle: 3°, chamber volume: 7.3 cm³).

Temperature [°C]	150	160	170	180	190	200	210
Scorch time [min]	10	5.5	3.4	2.3	1.5	1.2	1.1
Crosslinking time t_{50} [min]	-	27	12	8.1	4.3	2.8	2.2
Crosslinking time t_{90} [min]	-	80	40	22	10	5.4	3.7

Table 3. Comparison DYBP-85-WO and DTBP for polyethylene crosslinking.

Peroxide type	Scorch temperature	Equivalent dose (0.06 % AO)	t_{90} at 200 °C	Torque M_{max} at 200 °C
DTBP	approx. 150 °C	0.56 % as supplied	4.0 min	7.6 Nm
DYBP-85-WO	approx. 150 °C	0.65 % as supplied	5.1 min	8.8 Nm

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