



Thai Organic Chemical Co., Ltd. (Epoxy Division)

EPOTEC YDH 184 M1 / TH 7356 P

Liquid Hot Curing EPOTEC Casting Resin System

YDH 184 M1	100	Pbw
TH 7356 P	80	Pbw
Silica	270	Pbw

Description

EPOTEC YDH 184 M1 is a low viscosity, low molecular weight, modified cycloaliphatic epoxy resin designed for high voltage outdoor electrical applications.

EPOTEC TH 7356P is a liquid cycloaliphatic anhydride hardener mixed with promoter to cure epoxy resin at elevated temperature.

When appropriate quantity of hardener, accelerator, and filler are mixed with resin and casted under vacuum, crack free components with excellent mechanical and electrical properties can be achieved with very high uniformity. This system is capable to provide good thermal shock resistance and suitable to use for outdoor applications.

Processing

Automatic pressure gelation, pressure gelation and conventional vacuum casting.

Application

Electrical insulation for medium voltage outdoor applications such as switchgear components, instrument transformers, bushings, line, post and pin insulators.

Typical properties

EPOTEC YDH 184 M1

Property	Test method	Unit	Specification
Appearance	Visual	-	Clear liquid
Viscosity @ 25 °C	JIS K 7233	cPs	300 - 600
Specific gravity @ 25 °C	TEC-AS-P-004	-	1.14 - 1.20
Epoxy equivalent weight (EEW)	DIN 16945/4.15B (89) TEC-AS-C-002	g/eq	182 - 194

EPOTEC TH 7356 P

Property	Test method	Unit	Specification
Appearance	Visual	-	Clear liquid
Viscosity @ 25 °C	JIS K 7233	cPs	70 - 130
Specific gravity @ 25 °C	TEC-AS-P-004	-	1.15 - 1.20

Casting mix preparation method

Resin YDH 184 M1 is to be mix in a cleaned mixer with dried silica flour (drying of silica can be done at about 150°C for 16-24 hours in oven) at elevated temperature about 60 °C under vacuum (0.5 - 5 mbar). Hardener TH 7356 P is to be taken in separate mixer and mixing should be performed thoroughly under vacuum. Both premixes then feed to final mixer or a continuous mixer through metering pump. The premixes prepared in separate vessels can be stored for one week at elevated temperature (up to 60 °C). To prevent filler sedimentation, we recommend intermittent agitation of the premixes.

Alternatively, resin and dried filler can be mixed at 40 - 60°C temperature for 1 - 2 hours and then required quantity of hardener can be added into it. Mixing is to be continued at 40 – 60 °C for 30 to 60 minutes under vacuum (0.5 - 5 mbar) and then mix can be poured into preheated molds.

Specific processing instructions

Effective pot life of above mix is about 1 - 2 days below 25 °C. Conventional batch mixers should be cleaned once a week or at the end of the work. For longer interruptions of work, the pipes of the mixing and metering installations have to be cleaned with the resin components.

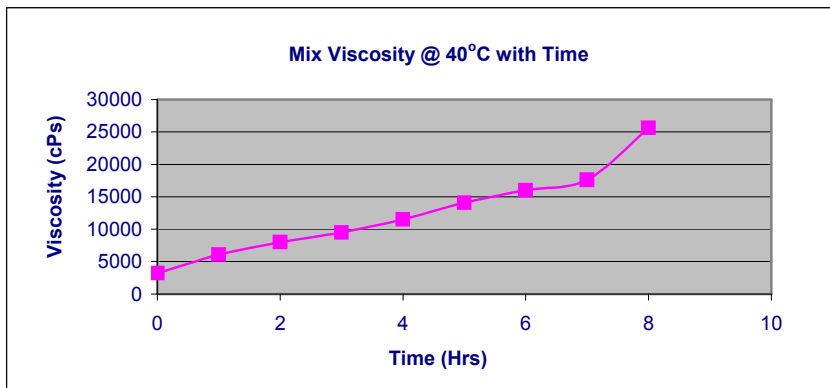
Processing properties of system

Property	Unit	Specification
Initial viscosity of mix	cPs / °C	6,400 / 25 3,000 / 40 700 / 60
Pot life of mix	Hr / °C	8 / 40 4 / 60
Gel time	Min / °C	122 / 80 11 / 120 5 / 140
Mould temperature APG processes Conventional vacuum casting	°C °C	130 - 160 80 - 100
Demolding time (depending upon mold temperature and casting volume) APG processes Conventional vacuum casting	Minutes Hrs	10 - 50 5 - 8
Minimum post cure APG process Conventional vacuum casting	Hrs / °C	4 / 130 or 3 / 140 12 / 130 or 8 / 140

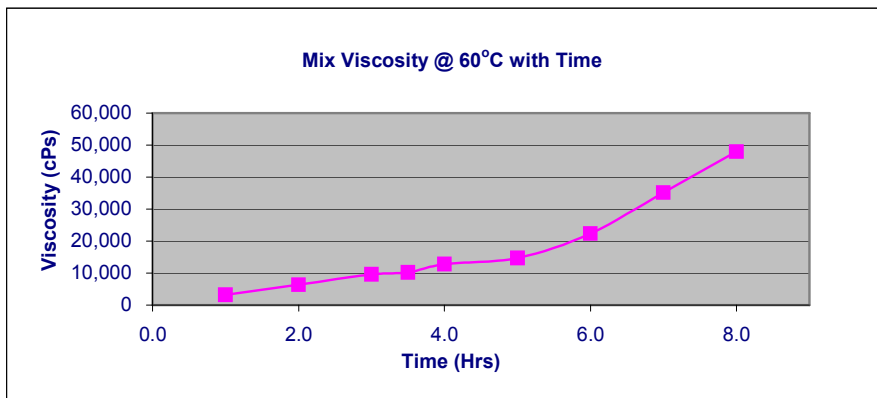
Properties of casting

Property	Test method	Unit	Specification
Tensile strength	ISO 527	MPa	70 - 90
Tensile elongation at break	ISO 527	%	1 - 1.5
Tensile modulus	ISO 527	MPa	10,500 - 12,000
Flexural strength	ISO 178	MPa	150 - 170
Flexural elongation	ISO 178	MPa	1.7 - 2.0
Flexural modulus	ISO 178	MPa	10,500 - 12,000
Deflection temperature (HDT)	ISO / R 75	°C	72 - 80
Glass transition temperature (Tg)	DSC	°C	75 - 85
Density	DIN 55990	g / cm ³	1.8 - 1.85
Water absorption (50 x 50 x 4 mm) 23 °C/ 10 days 60 min/ 100 °C	ISO / R 62	% %	0.1 - 0.2 0.06 - 0.15
Arc resistance	ASTM D 495	Seconds	> 185
Comparative tracking index	IEC 60112	Volts	> 600
Electrical strength perpendicular (2 mm thick sheet)	IEC 60243-1	Kv / mm	18 - 22

Graph 1 : Mix viscosity behavior of YDH 184 M1 and TH 7356P mixed with silica at 40 °C



Graph 2 : Mix viscosity behavior of YDH 184 M1 and TH 7356P mixed with silica at 60 °C



Storage and handling

EPOTEC YDH 184 M1 and TH 7356 P can be stored up to 1 year in sealed original container. Storage condition below 15 °C may cause crystallization of the resin as well as hardener. Crystallization may be reversed completely by heating the material to 50 - 60 °C. It is advised to use resin and hardener only when they are clear and free from cloudiness.

Hardener TH 7356 P is sensitive to moisture thus partly emptied containers should be closed immediately after use

It is also advised to follow standard procedures for handling chemicals. Contact with skin and eye may cause irritation and prolong, repetitive contact with skin may cause dermatitis.

Disclaimer

All recommendations for use of our products whether given by us in writing, verbally or to be implied from the results of tests carried out by us are based on the current state of our knowledge. Although, the information contained in this sheet is accurate, no liability can be accepted in respect of such information. We warrant only that our product will meet the designated specifications and make no other warranty either express or implied, including any warranty of merchantability or fitness for a particular purpose as the conditions of application are beyond our control.

For Additional Information
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