

Epoxy Resin – Warm curing system Cured In-Place Pipe Rehabilitation

DESCRIPTION

This system is an epoxy resin designed to provide a tough, flexible barrier liner in services at temperature up to about 80 °C. The maximum operating pressure depends on the size of cracks and the conditions of the original pipe. Additional service temperature (80 °C) is achieved by extending the cure schedule. EPO 9100-1 fulfil the requirement of EN standard 13566-4:2002.

PROPERTIES

- Warm curing system
- Good physical strengths
- Good adhesion
- Fast cure at 80-100 °C with controlled exotherm
- Long working time
- WRc approved according ISO 13566-4: 2002

PROCESSING CONDITIONS

After mixing according to the indicated ratio, impregnate the reinforcement (felt...), it is recommended to cure the product for minimum 2.5 to 3.5 hours at 80 °C with hot water or 95-100 °C with steam.

Depending of the diameter and length of the pipe, air pressure should be maintained (between 1 to 2 bars) during the refreshing of the pipe. Room temperature air is introduced to purge and harden off the resin (about 30 to 60 minutes). Additional service temperature (see table THERMAL PROPERTIES of NEAT RESIN page 2) is achieved by extending the cure schedule.

TYPICAL HANDLING PROPERTIES				
Composition		RESIN	HARDENER	MIXED
Mix ratio by weight		100	36.5	
Mix ratio by volume at 25 °C		100	44	
Aspect	-	liquid	liquid	liquid
Colour	-	ochre	blue	green
Viscosity at 25 °C (mPa.s)	BROOKFIELD LVT	3,500	50	650
Specific gravity at 25 °C (g/cm ³)	ISO 1675: 1985	1.16	0.97	1.10
Pot life at 25 °C on 500 g (hr)	DIN 16945: 1989			6.5
Sensitivity to water during cure	-			low

MECHANICAL PROPERTIES of NEAT RESIN at 23 °C (1)				
Hardening time			5 Hours at 80 °C	16 Hours at 80 °C
Tensile modulus	ISO 527-2: 1993	MPa	2,700	3,100
Tensile strength	ISO 527-2: 1993	MPa	74	67
Elongation at break	ISO 527-2: 1993	%	4.5	7.1
Flexural modulus	ISO 178: 2001	MPa	3,200	2,900
Flexural strength	ISO 178: 2001	MPa	110	115

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THERMAL PROPERTIES of NEAT RESIN (1)			
Heat deflection temperature	ISO 75-2: 2004 Method A Specimen position: Edgewise	°C	
- 3 Hours at 80°C			60
- 4 Hours at 80°C			68
- 5 Hours at 80°C			74
- 16 Hours at 80°C			82

(1) : Average values obtained on standard specimens of neat resin

STORAGE CONDITIONS

Shelf life of both parts is 12 months in a dry place and in their original unopened containers at a temperature between 6 and 35°C. See expiry date on original container.

HANDLING PRECAUTIONS

Normal health and safety precautions should be observed when handling these products :

- Ensure good ventilation
 - Wear gloves, safety glasses and waterproof clothes.
- For further information, please consult the product safety data sheet.

PACKAGING

RESIN	HARDENER
1 x 16 kg	1 x 5.85 KG

GUARANTEE

The information contained in this technical data sheet result from research and tests conducted in our Laboratories under precise conditions. It is the responsibility of the user to determine the suitability of AXSON products, under their own conditions before commencing with the proposed application. AXSON guarantee the conformity of their products with their specifications but cannot guarantee the compatibility of a product with any particular application. AXSON disclaim all responsibility for damage from any incident which results from the use of these products. The responsibility of AXSON is strictly limited to reimbursement or replacement of products which do not comply with the published specifications.

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Assessment Schedule for the Axson EPO 9100-1 epoxy resin



independent certification of your products & services

1. Scope

1.1 To assess the EPO 9100-1 epoxy resin produced by Axson Technologies to BS EN 13566-4:2002⁽¹⁾.

1.2 The EPO 9100-1 epoxy resin is a two part (epoxy resin and hardener) system used for cured-in-place pipe rehabilitation in wastewater applications.

1.3 Approval exclusions:

i. The performance of the resin within a cured-in-place lining or localised (patch) repair.

2. Assessment schedule

2.1 The assessment comprises the following:

- materials quality audit;
- audit the evidence of quality control procedures for the manufacture, supply, materials handling and storage of the resin and hardener;
- mechanical properties of the cured resin;
- audit of the mixing instructions, and;
- audit of the resin mixing in accordance with the mixing instructions⁽²⁾.

3. Materials quality audit

3.1 The EPO 9100-1 epoxy resin consists of a combination of two materials:

- EPO 9100-1 epoxy resin, and;
- Epoxy curing agent (26.74% of epoxy resin by weight).

3.2 Quality management system certification for the materials supply

and resin and hardener manufacture shall be audited.

4. Performance testing

4.1 Performance testing is listed below which is based upon BS EN 13566-4:2002⁽¹⁾.

Mechanical Characteristics Testing

4.2 Mechanical testing requirements are listed in the table below for the Axson EPO 9100-1 epoxy resin.

Table 1 Mechanical characteristics

Parameter	Requirement
Flexural stress at first break	≥ 80 MPa 110.5 MPa
Tensile elongation at break	≥ 2.5 % 4.5 MPa
Temperature of deflection under load	≥ 70 °C 74.2 MPa

5. Review of mixing instructions and trial

5.1 Audit the mixing instructions for the Axson EPO 9100-1 epoxy resin⁽²⁾.

5.2 Witness a mixing trial to check for compliance with instructions.

6. Reference documents

1. BS EN 13566-4:2002, Plastic piping systems for renovation of underground non-pressure drainage and sewerage networks. Part 4 Cured-in-place-pipes.
2. EPO 9100-1 epoxy resin – warm curing system, September 27th, 2010.

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