

**METHOD STATEMENT
OF
EPOXY GLUING IN SEGMENT**



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01) PREAMBLE

The object of this method statement is to lay down a procedure for application of epoxy in joints of segment.

02) EQUIPMENT & MATERIALS

- Hand drilling machine or proper mixing.
- Thermometer.

03) REFERENCE DOCUMENTS

- IRC SP 65 guidelines for design and construction of segmental bridges
- Data sheet Technical Specification

04) Type of Epoxy

Depending upon the ambient temperature range, following types of epoxies are recommended for use:

- 5 to 20° C : Fast reacting
- 15 to 30° C : Medium fast reacting
- 25 to 40° C : Slow reacting

05) WORK MATERIAL

In case of epoxy jointed superstructure, pairing surfaces of both adjoining segments shall be effectively prepared by wire brushing, Sand blasting, water jetting and /or any other approved means to ensure that the bond breaking material is completely removed. Epoxy of about 1mm thickness on each of the pairing surfaces shall be applied (usually by hand application) within 70% of its pot life. Subsequently, the segment shall be brought closer to hug each other and an axial temporary compression of at least 0.3 MPa shall be applied by temporary arrangements for a minimum of 24 hrs. Refer Fig. A for a sample arrangement of temporary prestressing.

Duration of start of mixing epoxy to application in the surface should not exceed 20 minutes

The erection Plan in such a way that the time elapsed between mixing of epoxy, application to the pairing surfaces of segments and application of temporary force does not exceed 60 minutes.

Segments touching each other and then visually examining the matching of pairing surfaces, the axial temporary compression load should be maintained up to minimum of 24 hrs.

The mixing should be carried out as close as possible to the place where the epoxy will be applied, so as to avoid loss of time.



The mixing Motor should be 350 W, 400 rpm electric hand drilling machine or proper mixing table as recommended. The speed of 400 rpm should not be exceeded because higher revolutions will entrap air in the mix.



Epoxy comprises two components, namely resin and hardener.

Resin must be stirred by a mixer in its container for about 10 seconds or until homogeneity is reached. Thereafter hardener must be added and mixing continued.

For a mix of 5 kg batch, The mixing time should not exceed 3 minutes.

The temperature not allowed to rise above 40°C for fast reacting and medium and fast reacting The temperature not allowed to rise above 60°C for slow reacting formulations.

Ensure the mixing paddles scrape the bottom and sides of the container, so as to ensure complete mixing of the two components.

Adequate precaution shall be taken to ensure that epoxy material does not leak into joints of the ducts.



Refer Fig. A



06) Tests

Epoxy shall be tested for its conformance to the FIP-1978 “Proposal for Standard Tests and Verification of Epoxy Bonding Agents for Segmental Construction”. Some of the important properties (minimum values) of epoxy are as follows:

- Pot life** : 20 minutes (at 40°C for fast and medium reacting epoxies and at 60°C for slow reacting epoxy)
- Open time** : 60 minutes (at upper temperature limit)
- Compressive strength** : 60 MPa at 24 hrs and 75 MPa at 168 hrs on 50x50x50 mm cube (at lower temperature limit)
- Tensile bonding strength**: after 24 hrs at 100% humidity, should have concrete failure, no joint failure with M40 concrete (at lower temperature limit)
- Shear strength** : 12 MPa (at lower temperature limit)
- Curing rate** : compressive strength on 50x50x50 mm cube shall be 20 MPa at 12 hrs, 40 MPa at 24 hrs and 75 MPa at 168 hrs (at lower temperature limit)