



UPDATED FEBRUARY 2009

METHOD STATEMENT n. 2 FOR LAYING THE WEAR-RESISTANT COATING BASED ON TEP MORTAR ON STEEL BRIDGE SURFACES.

SURFACE PREPARATION

The steel surface to be protected should be grit-blasted to SA. 2 ½ grade.

After grit-blasting, carefully blow away or dust-off all remaining foreign particles. Take particular care in removing residuals from hidden cavities, complicated structure, etc.

As soon as possible, in all cases not later than 2-3 hours, the cleaned surface shall receive one coat of ZNP Primer.

APPLICATION

The Primer.

ZNP is a two-pack epoxy zinc phosphate primer, supplied in kg 28 pre-weighted packs, separate pails, kg 25,76 for component A (resin) and Kg. 2,24 for component B (hardener), mixing ratio: 92:8.

ZNP Primer is supplied in two different colours: brown and beige.

Mixing.

Pour the whole content of can B (hardener) into the can containing component A (resin). Mix thoroughly for 3-5 minutes using a suitable low-speed mechanical mixer until the material attains uniform consistency and colour. For small quantities, mix each component separately, then measure by weight 92 parts of component A and 8 parts of component B, mix them together to a uniform colour.

While mixing, take care to scrape the sides and bottom of the packs.

Do not add diluent.

Application.

Apply a first coat of ZNP Primer brown colour by roller, at a rate of about 200 gr/m² to obtain a dry film thickness of about 100 microns (150 microns wet).

Within 6-24 hours, apply a second coat of ZNP Primer beige colour at the rate of about 200 gr/m² to finally obtain a dry film thickness of about 200 microns (300 microns wet).

Pay attention not to apply the material in presence of condense (dew). In presence of humidity, we suggest to start application of first coat of ZNP Primer not before 9-9,30 in the morning and the second coat about 6-7 hours later in the afternoon.

Immediately after applying the second coat, scatter graded dry quartz sand (0,1-0,5 mm.dia) onto the freshly applied coat, with a consumption of about 300 gr/ m².

Top and final coat.

The top and final coat composed of TEP TAR Epoxy Polyurethane, dry quartz aggregate 0,3-0,9 mm.dia and dry Durop (hard mineral aggregate 2-3 mm.dia), shall be applied the next day making sure that the quartz sand scattered on the surface and the surface itself are absolutely dry. Before application of TEP mortar make sure to sweep off the quartz sand, not in adhesion with ZNP .

TEP is supplied in pre-weighted packs, separate pails of 22 Kg for component A (resin) and 22 Kg for component B (hardener), mixing ratio: 1:1.

Colour black.

Do not add diluent.

Mixing.

Start the paddle mixer then pour number two pails of component A first (equal to 44 kg) and two pails of component B (equal to 44 kg). Keep the paddle mixer working for about 2-3 minutes then add slowly into the mixer 44 kg of quartz sand (0,3-0,9 mm) and 44 kg of Durop (2-3 mm) for a total of 176 kg each mixing cycle.

Mix for 4-5 minutes to obtain a flow mortar consisting of:

1 part by weight of TEP

0,5 part by weight of quartz sand

0,5 part by weight of Durop.

When the flow mortar is duly mixed, drop it into wheel barrows and move it quickly to the laying place.

NOTE 1: The above mixing quantity has been calculated for the available mixer. Different mixing quantities should be considered according to the capacities of the mixer.

Laying:

While pouring the TEP based flow mortar on the bridge surface, it must be also promptly spread to a thickness of 5-5.5 mm (about 9-10 kg/m²) and made even using the appropriate toothed racks and other tools supplied.

At the same time, if necessary, any entrapped air shall be carefully made free with spiked trowels and rollers. Where necessary, workers may carry out these operations walking on spiked shoes.

The flow mortar should be, immediately after its application, scattered with 2 kg/m² of Durop (2-3 mm.dia) and 1 kg /m² of Durop (1-2 mm.dia).

Durop should be compacted to the surface with a garden roller as soon as possible, making sure TEP does not adhere to the surface of the roller, to reach a final thickness of 6 mm minimum.

NOTE 2: It is essential that the paddle mixers in thoroughly cleansed with OMNIA solvent and gravel after some 5-6 mixing cycles and again at the end of the working day.

Also the wheel barrows should be frequently scrubbed.

NOTE 3: In high climate countries the surface of the bridges should be protected from the sun for at least a few hours before application using sun barriers. TEP mortar to be protected from the sun for 24 hours after application.

NOTE 4: In high climate countries TEP should be kept at a temperature not higher than 25-27°C before mixing. A proper solution would be to put a shed with air condition, in a shadowy area, where to stock TEP, 12 hours before application. Do not leave the packs of resins and the bags of quartz sand and Durop exposed to direct sun rays.

METHOD STATEMENT 4

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No.	Working Step	Product	Coverage min. max (Kg/m ²)	Remarks
1	Preparation of surface <i>(immediately)</i>	Gritblasting S.A. 2 ½		
2	1 st Primer coat <i>(6-24 hours)</i>	ZNP PRIMER brown colour	0.180-0.220	Apply two primer coats in different colour shades to ensure a corrosion protection free of pores.
3	2 nd Primer Coat <i>(immediately)</i>	ZNP PRIMER	0.180-0.220	
4	Scattering <i>(1 day)</i>	Quartz sand 0,1- 0,5 mm	0.300-0.400	
5	Flow-mortar Part by weight 1,0 Part by weight 0,5 Part by weight 0,5 <i>(immediately)</i>	TEP (epoxy tar polyurethane) Quartz sand 0,3 - 0,9 mm DUROP 2 - 3 mm	4,00- 5,00 2,00- 2,50 <u>2,00- 2,50</u> 8,00 10,00	
6	Scattering <i>(immediately)</i>	DUROP 2 - 3 mm DUROP 1 - 2 mm	2,00-2,50 1,00-1,50	Apply the coarse grain first and continue with the fine grain.
7	Compaction <i>(as soon as possible)</i>			Compact the scattering with a light garden roller to ensure a good integration of the DUROP
8	Cleaning <i>(3-4 days)</i>			Remove DUROP in excess
9	Open to traffic <i>(7 days)</i>			

Remarks:

To avoid any new corrosion, the first primer coat has to be applied as fast as possible after sandblasting and cleaning of the steel surface.

ZNP has a very short open time when applied on a warm substrate. The scattering of sand has to be applied immediately to ensure its integration in the paint.

In hot climates it is recommended to protect the steel from direct sunlight by tents some hours before, during or after the application of the system. This will ensure longer open times of the products and thus simplify the application.

The waiting time between working steps is specified for 23° C.