

Powder coatings for reinforcing steel bars

Application and processing guidelines

Fusion Bond Epoxy (FBE) coatings are designed to increase the longevity of reinforcing steel bars in concrete structures. The protective benefits of Corro-Coat EP-F, a premium quality of FBE coatings, can be secured through controlled plant application and cautious rebar handling.

This document is intended to give insight into the Fusion Bond Epoxy powder coating application process and provide applicators with supporting information on the coated reinforcing steel bars handling procedures.

1. Application Process

1.1. Rebar quality

The quality of the steel rebar must meet ASTM A615, 616, 617 or 706 requirements. The surface of the steel bar should be free of contaminants such as oil, grease or paint. Bars showing imperfections, such as sharp edges and deformations, should not be coated.

1.2. Surface preparation

Proper cleaning is a pivotal aspect of any powder finishing system to obtain the desired functional and mechanical characteristics of the powder coating. The black bar must be grit or shot blasted to Near White steel ensuring a proper profile for powder adhesion. To this effect, a profilometer can be used to measure the depth of profile. After blasting, use an air knife to remove excess grit, dust and other foreign matter.

1.3. Pre-heating

The steel rebar passes through an induction coil or gas oven via a conveyor system for preheating. The number of rebar can vary from one to eighteen, depending on the width of the equipment. Temperature of the rebar should range between 230°C to 250°C.

1.4. Application

The steel rebar continues on the automatic conveyor and passes through the spray booth. Electrostatic guns, above and below the rebar, spray the Fusion Bond Epoxy powder ensuring uniform coverage. The Fusion Bond Epoxy coating is very reactive and uses the heat from the bar to fully cure.

1.5. Cooling

Allow sufficient time for curing. After curing the coated steel rebar must be cooled down rapidly. This is carried out by a series of shower heads spread along the path of the conveyor as the steel rebar exits the spray booth.

2. Coated Rebar Handling

2.1. Lifting

It is recommended to use a three-point spreader or a spreader beam to lift the rebar bundles. This will prevent the bundles from bending and abrading on each other, thus scratching the epoxy coating.

Lifting straps should be made of fabric material, such as nylon, and should be rated for the correct load.

Under no circumstances should metallic chains be used as they will damage the protective coating.

2.2. Transportation

Transported bundles of steel rebar should be kept apart by using wooden separators. These separators guard against vibration and load damage to the Fusion Bond Epoxy coating.

Any steel rebar exposed to an open wheel should be protected with a canvas to prevent stone chip damage from the road.

2.3. Laying

It is advisable to allocate steel rebar storage a separate area characterised by minimum pedestrian traffic.

The rebar stacks should be stored above ground and separated by wooden separators.

If the rebar stacks are to be stored in the open air for more than 2 - 3 weeks, it is recommended to cover them with canvas or dark polyethylene sheets to protect against sunlight, and weather exposure.

Precautions should be taken to use coated tie wire to tie bars and to employ rubber tipped vibrating tools in concrete after pouring to avoid damage to the coating.

2.4. Bending and Cutting

- a) It is recommended to use non metal Mandrels for bending.
- b) Any contact point should be padded with a cloth or similar.
- c) Bending should be carried out according to recommended practiced.
(Consult your local coater for advice).
- d) It is advisable to use touch up paint on the bare steel areas after cutting.

2.5. Repairs

- a) Clean damaged areas to ensure it is free of oil and grease using a mild solvent.
- b) Dry thoroughly.
- c) Abrade small areas if necessary with a file or wet sandpaper.
- d) Use an approved two-part epoxy repair material (as recommended from your local coater).
- e) Allow the paint to cure to at least 80% before concrete is used.

To repair damages to Corro-Coat EP-F Fusion Bond Epoxy coatings, it is recommended to use a touch up such as [Polyguard 85 from Jotun Paints](#). Application and dosage are supplied with the coating container. (For more information contact your local sales representative).