
**Epoxy powder and sealing material for the
coating of steel for the reinforcement of
concrete**

*Poudre époxy et matériau de réparation pour le revêtement des armatures
en acier pour béton*

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 14656 was prepared by Technical committee ISO/TC 17, *Steel*, Subcommittee SC 16, *Steels for the reinforcement and prestressing of concrete*.

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Epoxy powder and sealing material for the coating of steel for the reinforcement of concrete

1 Scope

This International Standard specifies requirements for epoxy powders for use in preparing fusion-bonded epoxy-coated steel reinforcing bar, wire and welded fabric. This International Standard also includes requirements for sealing material used to repair damaged areas and cut ends on reinforcing steel.

This International Standard defines a flexible (type A) coating and a nonflexible (type B) coating. The adhesion and moisture resistance of fusion-bonded epoxy powder coatings can be enhanced by certain formulation designs. These coating enhancements typically result in a reduction of the coating's flexibility.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 6272:1993, *Paints and varnishes — Falling weight test.*

ISO 9352:1995, *Plastics — Determination of resistance to wear by abrasive wheels.*

3 Terms and definitions

For the purpose of this International Standard, the following terms and definitions apply.

3.1

coated bar

steel reinforcing bar which has been coated with a fusion-bonded epoxy coating

3.2

disbonding

loss of adhesion between the fusion-bonded epoxy coating and the steel reinforcing bar, wire or welded fabric

3.3

fusion-bonded epoxy coating

coating containing pigments, thermosetting epoxy resins, crosslinking agents and other additives, which have been applied in the form of a powder on to a clean, heated metallic substrate and fused to form a continuous barrier

3.4

holiday

discontinuity in a coating which is not discernible to a person with normal or corrected vision

3.5

longitudinal rib

uniform continuous rib parallel to the axis of the steel reinforcing bar

3.6

manufacturer

any organization which produces coated steel reinforcing bars, wire or welded fabric

3.7

sealing material

a coating system, formulated to be compatible with the fusion-bonded epoxy coating, used to repair damaged areas and cut ends

3.8

transverse rib

any rib on the surface of the steel reinforcing bar or wire other than a longitudinal rib

4 Materials

4.1 Coating material

The coating material shall be a thermosetting epoxy powder.

4.2 Sealing material

The coating system, for use as sealing material, shall be compatible with the fusion-bonded epoxy coating, inert in concrete, and recommended by the epoxy powder manufacturer. The sealing material shall be suitable for repairing damaged coating at the manufacturer or fabricator, or at the site.

5 Coating requirements

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5.1 Chemical resistance

5.1.1 General

The ability of the coating to resist disbonding, blistering and corrosion in solutions that simulate potential exposure environments shall be evaluated by immersing coated, 20 mm diameter steel reinforcing bars in each of the following solutions:

- a) deionized water;
- b) an aqueous solution containing 3 % NaCl;
- c) an aqueous solution containing 0,3 KOH and 0,05 N NaOH;
- d) an aqueous solution containing 0,3 N KOH, 0,05 N NaOH and 3 % NaCl.

5.1.2 Type A coating

If the coating is classified as flexible, sixteen pieces of damage-free coated 20 mm diameter ribbed steel reinforcing bar, 300 mm in length, shall be selected for testing. Also, sixteen additional coated bars shall be bent 180° around a 100 mm diameter mandrel. The bend shall be made at a uniform rate and completed within 5 s. The overall (developed) length of the bent coated bars shall be 300 mm. After bending, the number of bending-induced holidays shall be determined using a 67,5 V, 80 000 Ω, wet-sponge type, direct current holiday detector and recorded. Prior to testing, all holidays and coated bar ends shall be coated with sealing material.