

QUALITY STANDARD FOR

ISOFUSION® V700

GLASS COATINGS

ISOFUSION® V700

1. SCOPE

This Standard specifies the quality requirements for the ISOFUSION® V700 process for glass coating by vitreous enamelling of panels intended for use in the construction of tanks for uses such as the storage of potable water or municipal sludge.

This Standard applies to the enamelling elements of the ISOFUSION® V700 process, however, the quality criteria in Section 5.2 should apply to the tank as built. The ISOFUSION® V700 glass coating has been developed with reference to International Standard specifications for glass coatings on bolted steel panels and conforms to EN ISO 28765⁽¹⁾.

2. DEFINITIONS

For the purposes of this Standard, the following definitions shall apply.

Glass coating: Any coating, commonly also referred to as vitreous enamel, based on silica Glass-Fused-to-Steel sheets by the ISOFUSION® V700 process at temperatures sufficient to cause glass melting and chemical bonding to the substrate so as to form a composite glass/steel panel.

Supplier: Any company supplying Permastore with any materials for use in the ISOFUSION® V700 process.

Defect: Any void, break, crack, thin spot, blister, foreign inclusion or contamination of the glass coating.

Discontinuity: Any defect which allows an electric current to pass through the glass coating when testing using the specified instrument operated in accordance with Section 5.2.2 of this Standard.

3. GENERAL

The inspection procedures specified in this Standard and the ISOFUSION® V700 enamelling process

shall be carried out under quality management systems accredited to ISO 9001⁽²⁾.

4. RAW MATERIALS

4.1 The steel used shall have a specification as agreed between Permastore and the steel supplier having due regard to the requirements of the enamelling process.

4.2 All other raw materials used in the production of the glass coated panels shall be inspected on receipt at Permastore's premises to ensure that they meet Permastore's specifications.

4.3 Where Permastore is not able to inspect raw material against any aspect of Permastore's specification or the specification according to Clause 5.1.1 (for example, chemical composition of steels, flow bead tests of glass etc.), Permastore shall require the supplier to carry out such inspections at the suppliers premises and provide Permastore with authorised copies of certificates for such inspections and record conformity of the raw materials in accordance with the Quality Specification, and make certified copies of those records available.

5. QUALITY

5.1 Glass Coating

Glass coated test samples shall be regularly tested to ensure that the properties of the glass coating meet the requirements of this Standard and Permastore's specification.

5.1.1 Quality Specification

Tests shall be carried out to ensure that the glass coating on the contact enamel surface meets the chemical resistance and physical property specifications set out in Table 1.

5.2.4 Inspection of Glass Colour

The outside panel surface shall be inspected using a colour comparator instrument and the colour checked against standard limits set by Permastore. Inspection shall be carried out using a sampling procedure complying with ISO 2859: Part 1. Panels of a colour outside these limits shall be rejected.

6. HANDLING AND PACKING

Prior to storage or packing panel edges shall be protected using a material approved by Permastore for this purpose and applied according to the edge protection material manufacturer's instructions. All panels shall be packed using a suitable membrane between the panels.

7. GUIDANCE NOTES FOR INSTALLATION AND USE

7.1 Care in Handling

Recommendations for the correct methods of handling outside the enamelling premises are given in the *Permastore Construction Guide*.

7.2 Inspection at the Construction Site

During tank installation, the use of an approved low voltage wet swab tester on the inside panel surface is recommended. Permastore can advise on the use of the low voltage wet swab test equipment. Guidance is also given in the *Permastore Construction Guide*.

7.3 Change of Use

Owners and users of industrial liquid storage tanks should be aware that changes in the use or structure of a tank can result in dramatic changes to the operating environment and affect the coating and design limitations of the tank. Permastore will offer advice on request.

8. REFERENCES

1. EN ISO 28765:2016

Vitreous and porcelain enamels – Design of vitreous enamel coated bolted steel tanks for the storage or treatment of water or municipal or industrial effluents and sludges.

2. ISO 9001

Quality management systems - Requirements for design, manufacture and installation of vitreous enamelled tanks and silos for storage and processing of liquid and dry product and associated equipment.

3. EN ISO 28706-1:2011

Vitreous and porcelain enamels – Determination of resistance to chemical corrosion – Part 1: Determination of resistance to chemical corrosion by acids at room temperature.

4. EN ISO 28706-2:2011

Vitreous and porcelain enamels – Determination of resistance to chemical corrosion – Part 2: Determination of resistance to chemical corrosion by boiling acids, neutral liquids and/or their vapours.

5. EN ISO 28706-4:2016

Vitreous and porcelain enamels – Determination of resistance to chemical corrosion – Part 4: Determination of resistance to chemical corrosion by alkaline liquids using a cylindrical vessel.

6. ISO 4532:1991

Determination of the resistance of enamelled articles to impact - Pistol test.

7. EN 10209:2013

Annex C: Cold-rolled low carbon steel flat products for vitreous enamelling – Technical delivery conditions.

8. EN 15771:2010

Vitreous and porcelain enamels – Determination of surface scratch hardness according to the Mohs scale.

9. EN ISO 2746:2015

Vitreous and porcelain enamels – High voltage test.

10. EN ISO 2178:1995

Non-magnetic coatings on magnetic substrates – Measurement of coating thickness – Magnetic method.

11. ISO 2859:1999

Sampling procedure for inspection by attributes - Part 1: sampling schemes indexed by Acceptance quality limit (AQL) for lot-by-lot inspection.