

Vitreous and porcelain enamels - Design of bolted steel tanks for the storage or treatment of water or municipal or industrial effluents and sludges (ISO 28765:2008)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 28765:2011 sisaldab Euroopa standardi EN ISO 28765:2011 ingliskeelset teksti.

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English Version

**Vitreous and porcelain enamels - Design of bolted steel tanks
for the storage or treatment of water or municipal or industrial
effluents and sludges (ISO 28765:2008)**

Émaux vitrifiés - Conception de réservoirs en acier
boulonnés pour le stockage ou le traitement des eaux ou
des effluents d'eaux usées urbains ou industriels (ISO
28765:2008)

Emails und Emaillierungen - Gestaltung von verschraubten
Stahlbehältern für die Speicherung oder Behandlung von
Wasser oder kommunalen und industriellen Abwässern und
Abwasserschlämme (ISO 28765:2008)

This European Standard was approved by CEN on 3 March 2011.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

The text of ISO 28765:2008 has been prepared by Technical Committee ISO/TC 107 “Metallic and other inorganic coatings” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 28765:2011 by Technical Committee CEN/TC 262 “Metallic and other inorganic coatings” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2011, and conflicting national standards shall be withdrawn at the latest by September 2011.

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Endorsement notice

The text of ISO 28765:2008 has been approved by CEN as a EN ISO 28765:2011 without any modification.

Contents

Page

Foreword.....	iv
1 Scope	1
2 Normative references	2
3 Terms and definitions.....	3
4 Symbols and abbreviated terms	5
5 Units	6
6 Information and requirements to be agreed and documented	6
6.1 General.....	6
6.2 Information to be provided by the purchaser	6
6.3 Information to be provided by the designer	7
7 Applicable standards.....	7
8 Loads.....	8
8.1 General.....	8
8.2 Contents	8
8.3 Tank structure	9
8.4 Roof.....	9
8.5 Equipment loads	10
8.6 Access	10
8.7 Environmental	10
8.8 Ancillary items	11
9 Design	11
9.1 General.....	11
9.2 Steel.....	11
9.3 Tank.....	12
9.4 Openings	17
9.5 Effects of accidents	18
10 Vitreous-enamel coating	19
10.1 Vitreous enamel	19
10.2 Coating.....	19
10.3 Vitreous-enamel quality	19
10.4 Protection during shipping.....	25
10.5 Maintenance	25
11 Installation	25
11.1 General guidance.....	25
11.2 Foundations	25
11.3 Inspection of the vitreous-enamel coating at the construction site.....	25
12 Disinfection	25
Bibliography	26

Vitreous and porcelain enamels — Design of bolted steel tanks for the storage or treatment of water or municipal or industrial effluents and sludges

1 Scope

This International Standard establishes the requirements for the design and use of vitreous-enamel-coated bolted cylindrical steel tanks for the storage or treatment of water or municipal or industrial effluents and sludges.

It applies to the design of the tank and any associated roof and gives guidance on the requirements for the design of the foundation.

It applies where

- a) the tank is cylindrical and is mounted on a load-bearing base substantially at or above ground level;
- b) the product of the tank diameter in metres and the wall height in metres lies within the range 5 to 500;
- c) the tank diameter does not exceed 100 m and the total wall height does not exceed 50 m;
- d) the stored material has the characteristics of a liquid, exerting a negligible frictional force on the tank wall; the stored material may be undergoing treatment as part of a municipal or industrial effluent treatment process;
- e) the internal pressure in the headspace above the liquid does not exceed 50 kPa and the internal partial vacuum above the liquid does not exceed 10 kPa;
- f) the walls of the tank are vertical;
- g) the floor of the tank is substantially flat at its intersection with the wall; the floor of the tank may have a rise or fall built in to allow complete emptying of the tank contents, the slope of which does not exceed 1:100;
- h) there is negligible inertial and impact load due to tank filling;
- i) the minimum thickness of the tank shell is 1,5 mm;
- j) the material used for the manufacture of the steel sheets is carbon steel (tanks constructed of sheets made from aluminium or stainless steel are outside the scope of this International Standard);
- k) the temperature of the tank wall during operation is within the range $-50\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$ under all operating conditions.

This International Standard also gives details of procedures to be followed during installation on site and for inspection and maintenance of the installed tank.

It does not apply to chemical-reaction vessels.

It does not apply to tanks fitted with floating roofs.

It does not cover resistance to fire.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2178, *Non-magnetic coatings on magnetic substrates — Measurement of coating thickness — Magnetic method*

ISO 2747, *Vitreous and porcelain enamels — Enamelled cooking utensils — Determination of resistance to thermal shock*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 4532, *Vitreous and porcelain enamels — Determination of the resistance of enamelled articles to impact — Pistol test*

ISO 6370-2, *Vitreous and porcelain enamels — Determination of the resistance to abrasion — Part 2: Loss in mass after sub-surface abrasion*

ISO 8289:2000, *Vitreous and porcelain enamels — Low voltage test for detecting and locating defects*

ISO 15686-1, *Buildings and constructed assets — Service life planning — Part 1: General principles*

ISO 28706-1:2008, *Vitreous and porcelain enamels — Determination of resistance to chemical corrosion — Part 1: Determination of resistance to chemical corrosion by acids at room temperature*

ISO 28706-2:2008, *Vitreous and porcelain enamels — Determination of resistance to chemical corrosion — Part 2: Determination of resistance to chemical corrosion by boiling acids, boiling neutral liquids and/or their vapours*

ISO 28706-3:2008, *Vitreous and porcelain enamels — Determination of resistance to chemical corrosion — Part 3: Determination of resistance to chemical corrosion by alkaline liquids using a hexagonal vessel*

ISO 28706-4:2008, *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*

EN 101, *Ceramic tiles — Determination of scratch hardness of surface according to Mohs*

EN 1993-1-6, *Eurocode 3 — Design of steel structures — Part 1-6: Strength and Stability of Shell Structures*

EN 1993-4-1, *Eurocode 3 — Design of steel structures — Part 4-1: Silos*

EN 1993-4-2, *Eurocode 3 — Design of steel structures — Part 4-2: Tanks*

EN 1998-4, *Eurocode 8 — Design of structures for earthquake resistance — Part 4: Silos, tanks and pipelines*

EN 10209:1996, *Cold rolled low carbon steel flat products for vitreous enamelling — Technical delivery conditions*

EN 14430:2004, *Vitreous and porcelain enamels — High voltage test*

ANSI/AWWA D 103-97, *Factory-Coated Bolted Steel Tanks for Water Storage*