

SLOVENSKI STANDARD

SIST EN 13575:2012

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Nadomešča:
SIST EN 13575:2005

Stacionarni plastomerni rezervoarji za nadzemno skladiščenje kemikalij - Rezervoarji iz polietilena, pihanega ali rotacijsko oblikovanega - Zahteve in preskusne metode

Static thermoplastic tanks for the above ground storage of chemicals - Blow moulded or rotationally moulded polyethylene tanks - Requirements and test methods

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Ortsfeste Tanks aus Thermoplasten für die oberirdische Lagerung von Chemikalien -
Tanks aus blas- oder rotationsgeformten Polyethylen - Anforderungen und Prüfverfahren

[SIST EN 13575:2012](#)

Réservoirs statiques thermoplastiques destinés au stockage non enterré de produits
chimiques - Réservoirs en polyéthylène moulés par soufflage ou par rotation - Exigences
et méthodes d'essai

Ta slovenski standard je istoveten z: EN 13575:2012

ICS:

23.020.10	Nepremične posode in rezervoarji	Stationary containers and tanks
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EUROPEAN STANDARD

EN 13575

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Supersedes EN 13575:2004

English Version

Static thermoplastic tanks for the above ground storage of chemicals - Blow moulded or rotationally moulded polyethylene tanks - Requirements and test methods

Réservoirs statiques thermoplastiques destinés au
stockage non enterré de produits chimiques - Réservoirs
en polyéthylène moulés par soufflage ou par rotation -
Exigences et méthodes d'essai

Ortsfeste Tanks aus Thermoplasten für die oberirdische
Lagerung von Chemikalien - Tanks aus blas- oder
rotationsgeformtem Polyethylen - Anforderungen und
Prüfverfahren

This European Standard was approved by CEN on 25 February 2012.

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Contents

Page

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	5
4 Requirements for materials	5
4.1 Tank.....	5
4.2 Material	5
5 Design requirements	7
5.1 General.....	7
5.2 Filling systems	7
5.3 Venting systems	7
5.4 Suction/outlet system	7
5.5 Overfill alarm / overfill prevention system	7
5.6 Contents gauge connection facility	7
6 Requirements for tanks	7
7 Marking, transport, handling and installation of tanks	10
7.1 Marking	10
7.2 Transport and handling	10
7.3 Installation	10
Annex A (informative) Creep curves	11
Annex B (normative) Test methods for determination of material characteristics	13
B.1 Density	13
B.2 Melt flow rate	13
B.3 Tensile properties	13
B.4 Chemical resistance	14
B.5 Weather resistance	16
Annex C (normative) Test methods for determination of tank characteristics	17
C.1 Capacity	17
C.2 Visual inspection	17
C.3 Mass	17
C.4 Wall thickness	17
C.5 Impact	17
C.6 Impact strength at low temperature.....	17
C.7 Elongation or deformation	18
C.8 Pressure resistance	19
C.9 Leak tightness	20
Annex D (informative) Evaluation of conformity	21
D.1 General.....	21
D.2 Type testing	21
D.3 Factory production control	22
Annex E (informative) A-deviations	24
Bibliography	27

Foreword

This document (EN 13575:2012) has been prepared by Technical Committee CEN/TC 266 "Thermoplastic static tanks", the secretariat of which is held by DIN.

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 October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.

This document supersedes EN 13575:2004.

The main changes compared to the previous edition are:

- a) Clause 1, Scope: the field of application has been extended to tanks with a volume of 400 l to 10 000 l;
- b) Clause 2, Normative references has been updated;
- c) Clause 6, Evaluation of conformity has been revised and moved to Annex D in its entirety;
- d) B.3. Tensile properties has been revised;
- e) B.4, Chemical resistance has been revised with reference to EN ISO 23667;
- f) C.8: For the pressure resistance test a support framework for tanks > 3 500 l is permitted;
- g) Annex D has been deleted; [SIST EN 13575:2012
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- h) Annex E has been deleted;
- i) The new Annex D "Evaluation of conformity" has been added;
- j) The new Annex E "A-deviations" has been added due to the national regulations of the Netherlands.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 13575:2012 (E)**1 Scope**

This European Standard specifies requirements for materials, physical properties and performance for blow moulded and rotationally moulded polyethylene single tanks, with or without reinforcement, for the above ground storage of chemical liquids having a maximum specific gravity of 1 400 kg/m³ except water and those liquids dealt with by EN 13341.

It is only applicable to static blow moulded or rotationally moulded polyethylene tanks, which are subjected to atmospheric pressures but not subject to any external loading and having a volume of 400 l to 10 000 l. Except for periodic temperature fluctuation their normal operating temperature does not exceed 25 °C.

Tanks according to this European Standard are expected to have a period of intended use of 10 years.

This European Standard specifies test methods and factory production control tests as well.

NOTE National and/or international regulations above and beyond the requirements of this standard may apply to the storage of liquids and the installation of tanks.

2 Normative references

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

EN 13616, *Overfill protection devices for static tanks for liquid petroleum fuels*

EN ISO 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test (ISO 179-1:2000)*

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EN ISO 293:2005, *Plastics — Compression moulding of test specimens of thermoplastic materials (ISO 293:2004)*

EN ISO 527-2:1996, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2:1993 including Corr 1:1994)*

EN ISO 1133, *Plastics — Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics (ISO 1133:2005)*

EN ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method (ISO 1183-1:2004)*

EN ISO 1183-2, *Plastics — Methods for determining the density of non-cellular plastics — Part 2 Density gradient column method (ISO 1183-2:2004)*

EN ISO 1872-2:2007, *Plastics — Polyethylene (PE) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties (ISO 1872-2:2007)*

EN ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance (ISO 4892-1:1999)*

EN ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps (ISO 4892-2:2006)*

EN ISO 23667:2007, *Packaging — Transport packaging for dangerous goods — Rigid plastics and plastics composite IBCs — Compatibility testing (ISO 23667:2007)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

tank

container for the storage of liquids at atmospheric pressure which retains its designed shape without any support when empty

3.2

brimful capacity (of a tank)

volume of water held by the tank filled through the filling orifice to the point of overflowing

3.3

maximum filling capacity (of a tank)

value of 95 % of the brimful capacity

3.4

reinforcement

constitutive element of a tank, which contributes to its mechanical stability

3.5

regrind

material prepared from clean, rejected, unused tanks, including trimmings from the production of tanks that will be reprocessed in a manufacturer's plant after having been previously processed by the same manufacturer in the production of tanks

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4 Requirements for materials

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4.1 Tank

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Flammable liquids with a flash point > 55 °C may be stored in these tanks without further requirements.

Flammable liquids with a flash point ≤ 55 °C may be only stored in these tanks if the requirements concerning electrostatic behaviour according to CLC/TR 50404 are considered.

4.2 Material

The raw materials and samples taken from the tanks shall be tested and fulfil the requirements according to Table 1.

The proportion of the regrind from the same material shall not exceed 50 % for blow-moulded tanks. Regrind shall not be used for rotationally moulded tanks.

If required by national authorities, creep curves similar to those given in Annex A shall be used to determine the long-term behaviour of the material.

If required by national authorities, the impact strength at low temperature shall be determined. When tested in accordance with C.6, the impact strength of a sample, cut from the tank, measured at -18 °C shall be at least 75 % of the impact strength measured at (23 ± 2) °C.

Table 1 — Material requirements

Material type	Property	Requirement	Test method
Blow-moulded polyethylene	Density ^a	shall not be less than 938 kg/m ³	B.1
	Melt flow rate ^b	shall be less than 12 g/10 min at 190 °C, 21,6 kg maximum increase of the melt flow rate of the moulded tank shall not be greater than 15 % of the value determined on the raw material	B.2
	Tensile strength ^c	tensile strength at yield shall not be less than 21 MPa elongation at yield shall not be more than 15 % elongation at break shall not be less than 200 %	B.3
Rotationally moulded polyethylene	Density ^a	shall not be less than 930 kg/m ³	B.1
	Melt flow rate ^b	shall be 4,0 g/10 min ± 3,0 g/10 min at 190 °C, 2,16 kg maximum variation of the melt flow rate of the moulded tank shall not be greater than 20 % of the value determined on the raw material	B.2
	Tensile strength ^c	tensile strength at yield shall not be less than 15 MPa elongation at yield shall not be more than 25 % elongation at break shall not be less than 200 %	B.3
Blow-moulded polyethylene and rotationally moulded polyethylene	Resistance against chemical liquids^c		
	Absorption behaviour	mass alteration shall be less than 10 %.	B.4.3
	Stress cracking resistance	either:	
		After 28 days immersion the tensile strength shall not be less than 85 % of the reference sample without pin impression	B.4.4.2
		or: the time to 50 % failure shall not be less than 500 h	B.4.4.3
	or: the time to failure at reference stress 9 MPa shall not be less than 20 h	B.4.4.4	
Degradation test	the increase in melt flow rate shall not be more than 30 % reduction in elongation at break shall not exceed 50 % of that measured in B.3.	B.4.5	
Weather resistance ^c	For external installations after exposure to global irradiance of 34 GJ/m ² (corresponding to an irradiance of 2,3 GJ/m ² for the band from 300 nm to 400 nm) the elongation at break shall be greater than 50 % of the initial value. For internal installations the elongation at break after exposure to global irradiance of 3,4 GJ/m ² (corresponding to an irradiance of 0,23 GJ/m ² for the band from 300 nm to 400 nm) shall be greater than 50 % of the initial elongation at break. NOTE The manufacturer should ensure that changing the additive package does not decrease weather resistance.	B.5	
^a Test to be carried out on raw material. ^b Test to be carried out on raw material and on tank. ^c Test to be carried out on tank.			

5 Design requirements

5.1 General

The requirements according to 5.2 to 5.6 are minimum requirements. Additionally openings, e.g. manholes or inspection hatches, are recommended.

5.2 Filling systems

In the case of direct fill, the opening for filling shall be a minimum of 38 mm in diameter and shall be covered with a cap or lid.

5.3 Venting systems

All tanks shall be equipped with venting facilities. The cross sectional area of the venting shall not be less than the cross sectional area of the filling system. The cross sectional area shall be sufficient to avoid either over- or under-pressure.

5.4 Suction/outlet system

Tanks shall be equipped with an opening permitting the safe and reliable connection of withdrawal systems. All fittings shall be corrosion resistant. The tank outlet may be installed above or below the liquid level.

5.5 Overfill alarm / overfill prevention system

All tanks, which are filled by fixed pipework, shall have on the top of the tank a provision to fit an appropriate overfill alarm/overfill prevention system, which in the case of liquid petroleum fuels shall be in accordance with the requirements of EN 13616.

[SIST EN 13575:2012](https://standards.iteh.ai/catalog/standards/sist/087f9924-95d5-441c-b6c6-c9117d931f/sist-en-13575-2012)

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5.6 Contents gauge connection facility

If the level of liquid can be seen through the walls of the tank a contents gauge is not required. In all other cases provision shall be made for a contents gauge to be fitted.

6 Requirements for tanks

Blow-moulded and rotationally-moulded tanks shall be tested according to Table 2 and Table 3.

Table 2 — Requirements for blow-moulded polyethylene thermoplastic tanks

Property	Requirement	Test method	
Capacity	The brimful capacity shall be measured. The maximum filling capacity, declared by the manufacturer, shall be checked.	C.1	
Visual inspection	There shall be no bubbles, blisters or other defects in the tank wall which could cause a hole or fracture.	C.2	
Mass	Minimum mass shall be the mass of the lightest tank.	C.3	
Wall thickness	For tanks tested in accordance with C.7.1 the minimum wall thickness shall not be less than 2,5 mm.	C.4	
	For tanks tested in accordance with C.7.2, the minimum wall thickness shall be as follows, except for each area in which the surface does not exceed 300 mm ² , where a margin of 10 % shall be allowed regarding the minimum wall thickness. These areas shall be located a minimum of 50 mm from the bottom of the tank. The manufacturer shall declare in a document that the margin has no effects on the physical properties of the tank.		
	For maximum filling capacity		Minimum wall thickness
	≥ 400 l, < 1 000 l		3,0 mm
	≥ 1 000 l, < 1 500 l		3,2 mm
	≥ 1 500 l, < 2 000 l		3,5 mm
	≥ 2 000 l, < 2 500 l		3,7 mm
	≥ 2 500 l, < 3 000 l		3,9 mm
≥ 3 000 l, < 3 500 l	4,0 mm		
	The minimum wall thickness of tanks with a maximum filling capacity ≥ 3 500 l shall be determined according to C.7.1.		
Impact resistance	The tank shall remain leak tight.	C.5	
Elongation	Elongation at the surface shall not exceed 1,5 % after 1 000 h.	C.7.1	
Deformation	After refilling, the deformation shall conform to the following formulae: $w_d \leq w_i + 100 \text{ mm}$ $l_d \leq l_i + 200 \text{ mm}$ where l_d is the length of the tank after deformation in mm, l_i is the initial length of the tank in mm, w_d is the width of the tank after deformation in mm , w_i is the initial width of the tank in mm.	C.7.2	
Pressure resistance	The tank shall be pressure resistant. In the case of reinforced tanks, the reinforcement shall retain its reinforcing function up to a hydrostatic pressure corresponding to twice the tank height.	C.8	
Leak tightness	The tank shall be leak tight.	C.9	

Table 3 — Requirements for rotationally moulded polyethylene thermoplastic tanks

Property	Requirement	Test method	
Capacity	The brimful capacity shall be measured. The maximum filling capacity, declared by the manufacturer, shall be checked.	C.1	
Visual inspection	There shall be no bubbles, blisters or other defects in the tank wall which could cause a hole or fracture.	C.2	
Mass	Minimum mass shall be the mass of the lightest tank.	C.3	
Wall thickness	For tanks tested in accordance with C.7.1 the minimum wall thickness shall not be less than 2,5 mm.	C.4	
	For tanks tested in accordance with C.7.2, the minimum wall thickness shall be as follows, except for each area in which the surface does not exceed 300 mm ² , where a margin of 10 % shall be allowed regarding the minimum wall thickness. These areas shall be located a minimum of 50 mm from the bottom of the tank. The manufacturer shall declare in a document that the margin has no effects on the physical properties of the tank.		
	For maximum filling capacity		Minimum wall thickness
	≥ 400 l, < 1 000 l		3,3 mm
	≥ 1 000 l, < 1 500 l		3,5 mm
	≥ 1 500 l, < 2 000 l		3,9 mm
	≥ 2 000 l, < 2 500 l		4,1 mm
	≥ 2 500 l, < 3 000 l		4,3 mm
	≥ 3 000 l, < 3 500 l		4,4 mm
	≥ 3 500 l, < 5 000 l		4,8 mm
≥ 5 000 l, < 7 500 l	5,1 mm		
≥ 7 500 l, < 10 000 l	5,4 mm		
Impact resistance	The tank shall remain leak tight.	C.5	
Elongation	Elongation at the surface shall not exceed 1,5 % after 1 000 h.	C.7.1	
Deformation	After refilling the deformation shall conform to the following inequalities: $w_d \leq w_i + 100 \text{ mm}$ $l_d \leq l_i + 200 \text{ mm}$ where l_d is the length of the tank after deformation in mm, l_i is the initial length of the tank in mm, w_d is the width of the tank after deformation in mm, w_i is the initial width of the tank in mm.	C.7.2	
Pressure resistance	The tank shall be pressure resistant. In the case of reinforced tanks, the reinforcement shall retain its reinforcing function up to a hydrostatic pressure corresponding to twice the tank height.	C.8	
Leak tightness	The tank shall be leak tight.	C.9	