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Posode za prevoz nevarnega blaga - Preskušanje, nadzor in označevanje kovinskih posod

Tanks for transport of dangerous goods - Testing, inspection and marking of metallic tanks

Tanks für die Beförderung gefährlicher Güter - Prüfung, Inspektion und Kennzeichnung von Metalltanks

Citernes destinées au transport de matières dangereuses - Epreuve, contrôle et marquage des citernes métalliques

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Tanks for transport of dangerous goods - Testing, inspection and marking of metallic tanks

Citernes destinées au transport de matières dangereuses -
Epreuve, contrôle et marquage des citernes métalliques

Tanks für die Beförderung gefährlicher Güter - Prüfung,
Inspektion und Kennzeichnung von Metalltanks

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 296.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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Foreword

This document (prEN 12972:2012) has been prepared by Technical Committee CEN/TC 296 "Tanks for transport of dangerous goods", the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12972:2007.

According to edition EN 12972:2007 the following fundamental changes are given:

- a) alignment of the standard with ADR 2011;
- b) updating of the normative references.

The document has been submitted for reference into the RID [8] and/or in the technical annexes of the ADR [9].

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SIST EN 12972:2015

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Introduction

The frequencies of the different types of tank inspection as well as the responsibilities for the inspections are given by the relevant regulations concerning the transport of dangerous goods.

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1 Scope

This European Standard specifies testing, inspection and marking for the type approval, initial inspection, periodic inspection, intermediate inspection and exceptional check of metallic tanks (shell and equipment) of fixed tanks (tank vehicles), demountable tanks, rail tank wagons, portable tanks and tank containers for the transport of dangerous goods.

This European Standard is not applicable to battery-vehicles and battery-wagons comprising cylinders, tubes, pressure drums, bundles of cylinders and multiple element gas containers (MEGCs), independent of whether the elements are receptacles or 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 287-1, *Qualification of welders — Fusion welding — Part 1: Steels*

EN 837-1, *Pressure gauges — Part 1: Bourdon tube pressure gauges — Dimensions, metrology, requirements and testing*

EN 837-2, *Pressure gauges — Part 2: Selection and installation recommendations for pressure gauges*

EN 837-3, *Pressure gauges — Part 3: Diaphragm and capsule pressure gauges — Dimensions, metrology, requirements and testing*

EN 12266-1:2003, *Industrial valves — Testing of valves — Part 1: Pressure tests, test procedures and acceptance criteria — Mandatory requirements*

EN 12561-1, *Railway applications — Tank wagons — Part 1: Marking of tank wagons for the carriage of dangerous goods*

EN ISO 9606-2, *Qualification test of welders — Fusion welding — Part 2: Aluminium and aluminium alloys (ISO 9606-2:2004)*

EN ISO 9606-3, *Qualification test of welders — Fusion welding — Part 3: Copper and copper alloys (ISO 9606-3:1999)*

EN ISO 9606-4, *Approval testing of welders — Fusion welding — Part 4: Nickel and nickel alloys (ISO 9606-4:1999)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials — Part 1: General rules (ISO 15607:2003)*

EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 4: Arc welding (ISO 15609-1:2004)*

EN ISO 15614-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1:2004)*

EN ISO 15614-2, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 2: Arc welding of aluminium and its alloys (ISO 15614-2:2005)*

UN Manual of Tests and Criteria, Part IV

prEN 12972:2012 (E)**3 Terms and definitions**

The definition of terms used in this document is taken as those given by the relevant regulations concerning the transport of dangerous goods unless otherwise stated.

For the purposes of this European Standard, the following additional terms and definitions apply.

3.1**inspector**

individual or body approved by the competent authority to perform designated inspection and tests

3.2**intermediate inspection**

inspection carried out between the initial and the first periodic inspection or between two periodic inspections

3.3**protective lining or coating**

lining or coating protecting the metallic tank material against the corrosive attack by the substances to be carried

Note 1 to entry: This does not apply to lining or coating used only to protect the substance to be carried.

3.4**repair**

correction of a defect which may have impaired the safety of the tank or the equipment

Note 1 to entry: It does not include normal service and maintenance operations of the shell or service equipment or replacement of gaskets or service equipment to the same specification.

3.5**technical code**

code or standard(s) according to which the tank has been designed and constructed

4 Tank inspections**4.1 Inspection for type approval****4.1.1 General**

The inspection for type approval shall be carried out on a prototype tank for a type approval of either a single tank or a range of tanks. A type approval which includes a range of tanks will allow the following variations to the design without requiring a new approval, if there are no other conflicting technical or legal requirements:

- a decrease in the initial design temperature range;
- a decrease in the maximum gross mass;
- a reduction in volume only resulting from variations in diameter (not applicable to non-cylindrical tanks) and length; the approval file includes a calculation for each proposed diameter, length and number of compartments of the tank under the most unfavourable conditions, i.e.:
 - greatest density of goods;
 - greatest tank length and diameter;
 - greatest tank front compartment;
 - greatest tank rear compartment;

- a variation in the grade of the material used; in the case of austenitic steels and aluminium alloys different grades may be allowed with the following reserves:
 - use of the same qualified welding procedure;
 - calculation is carried out in the most unfavourable case, in particular the mechanical characteristics selected are for each element the lowest values of the grades used;
 - the instruction manual specifies the alternatives for compatibility with the substances being carried;
- movement or modification of nozzles and manholes provided that the same level of protection is afforded and the tank strength calculation takes into account the most unfavourable case;
- an increase of the number of baffles and surge plates;
- an increase of the wall thickness provided the same welding procedures are used;
- a decrease of the maximum working pressure;
- an increase in the thickness of the insulation used for additional protection;
- an increase in the effectiveness of the thermal insulation of the tank;
- use of alternative service equipment if there is no change in the technical specification of the equipment and it is placed in the same location.

4.1.2 Content of inspection

The inspection for type approval shall be carried out in accordance with the following subclauses:

- examination of documents (see 5.2.1);
- check of the design characteristics (see 5.3);
- inspection of the tank interior (see 5.4);
- inspection of the tank exterior (see 5.5);
- hydraulic pressure test (see 5.6);
- vacuum test (see 5.7, only if required and if no calculation or FE-analysis has been provided);
- leakproofness test (see 5.8);
- determination of water capacity (see 5.9);
- inspection of service equipment (see 5.10);
- inspection of frame or other structural equipment of portable tanks and tank containers (see 5.11);
- dynamic longitudinal impact test of portable tanks (see 5.12)

The inspection for type approval to allow the amendment of the type approval shall be carried out as a re-examination of the respective applicable clauses of the original inspection for type approval.

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4.1.3 Documentation

The results of the inspection for type approval shall be recorded by the inspector in a test report.

NOTE A preliminary report can be issued after examination of the documents.

In addition to the test report it is recommended that a data sheet is submitted to assist the issuing of type approval (see Annex A).

4.2 Initial inspection

4.2.1 Content of inspection

The initial inspection shall be carried out in accordance with the following subclauses:

- examination of documents (see 5.2.2);
- check of the design characteristics (see 5.3);
- inspection of the tank interior (see 5.4);
- inspection of the tank exterior (see 5.5);
- hydraulic pressure test (see 5.6);
- leakproofness test (see 5.8);
- determination of water capacity (see 5.9; only where required by regulation for individual tanks);
- inspection of service equipment (see 5.10);
- inspection of frame or other structural equipment of portable tanks and tank containers (see 5.11).

4.2.2 Documentation, certification and marking

The results of the initial inspection shall be recorded by the inspector on a certificate. An individual tank that has been tested and passed for type approval shall be issued with an initial inspection certificate. Certification and marking shall be in accordance with 5.13.

4.3 Periodic inspection

4.3.1 Content of inspection

The periodic inspection shall be carried out in accordance with the following subclauses:

- examination of documents (see 5.2.3);
- inspection of the tank interior (see 5.4);
- inspection of the tank exterior (see 5.5);
- hydraulic pressure test (see 5.6);
- leakproofness test (see 5.8);
- inspection of service equipment (see 5.10);
- inspection of frame or other structural equipment of portable tanks and tank containers (see 5.11).

For vacuum insulated tanks the inspection of the tank interior and the hydraulic pressure test are not required provided that a satisfactory vacuum is confirmed by measurement. In the case of tanks intended for the carriage of powdery or granular substances the hydraulic pressure test may be omitted and replaced by the leakproofness test (see 5.8).

4.3.2 Documentation, certification and marking

The results of the periodic inspection shall be recorded by the inspector on a certificate. Any defect found which can impair the safety of the tank or the equipment and any related repairs carried out shall be recorded on the certificate. Certification and marking shall be in accordance with 5.13.

4.4 Intermediate inspection

4.4.1 Content of inspection

The intermediate inspection shall be carried out in accordance with the following subclauses:

- examination of documents (see 5.2.4);
- inspection of the tank interior (see 5.4; only where required by regulation);
- inspection of the tank exterior (see 5.5);
- leakproofness test (see 5.8);
- inspection of service equipment (see 5.10).
- inspection of frame or other structural equipment of portable tanks and tank containers (see 5.11; only where required by regulation).

4.4.2 Documentation, certification and marking

The results of the intermediate inspection shall be recorded by the inspector on a certificate. Any defect found which can impair the safety of the tank or the equipment and any related repairs carried out shall be recorded on the certificate. Certification and marking shall be in accordance with 5.13.

prEN 12972:2012 (E)**4.5 Exceptional checks****4.5.1 Exceptional check after damage or repair of the tank**

The exceptional check after damage of the tank which can have impaired the safety of the shell, and/or after repair, shall be carried out in accordance with the following subclauses as applicable:

- examination of documents (see 5.2.5);
- check of the design characteristics (see 5.3);
- inspection of the tank interior (see 5.4);
- inspection of the tank exterior (see 5.5);
- hydraulic pressure test (see 5.6);
- leakproofness test (see 5.8);
- inspection of service equipment (see 5.10).

4.5.2 Exceptional check after repair or replacement of service equipment

The exceptional check after repair or replacement of the service equipment shall be carried out in accordance with the following subclauses as applicable:

- examination of documents (see 5.2.5);
- check of the design characteristics (see 5.3);
- leakproofness test (see 5.8);
- inspection of service equipment (see 5.10).

4.5.3 Exceptional check after replacement of service equipment involving the application of heat

The exceptional check after exchange of the service equipment involving the application of heat (for example welding or cutting) which can have impaired the safety of the tank or the service equipment shall be carried out in accordance with the following subclauses as applicable:

- examination of documents (see 5.2.5);
- check of the design characteristics (see 5.3);
- inspection of the tank interior (see 5.4);
- inspection of the tank exterior (see 5.5);
- hydraulic pressure test (see 5.6);
- leakproofness test (see 5.8);
- inspection of service equipment (see 5.10).

4.5.4 Exceptional check after alteration to the tank

If there is an alteration to the tank not in accordance with the type approval the applicable units of the inspection for type approval shall be reassessed.

4.5.5 Exceptional check after exchange or repair of frame or structural equipment

The exceptional check after exchange or repair of frame or structural equipment shall be carried out in accordance with the following subclauses as applicable:

- examination of documents (see 5.2.5);
- check of the design characteristics (see 5.3);
- inspection of frame or other structural equipment of portable tanks and tank containers (see 5.11).

4.5.6 Exceptional check before and after repair or replacement of the protective lining or coating

The exceptional check before and after repair or replacement of the protective lining or coating whose defect can impair the safety of the tank shall be carried out in accordance with the following subclauses as applicable:

- examination of documents (see 5.2.5);
- check of the design characteristics (see 5.3);
- inspection of the tank interior (see 5.4);
- hydraulic pressure tests after application of heat (for example burning of the existing lining) which can have impaired the safety of the tank (see 5.6);
- leakproofness test (see 5.8).

4.5.7 Documentation, certification and marking

The results of the exceptional check shall be recorded by the inspector on a certificate. Any defects found which can impair the safety of the tank or the equipment and any related repairs carried out shall be recorded on the certificate. Certification and marking shall be in accordance with 5.13.

A preliminary report can be issued after examination of documents.

5 Units used for tank inspection

5.1 General

A tank which fails one or more units of inspection shall, once the failure has been investigated and corrected, be retested in accordance with the requirements of those units. If, in the opinion of the inspector, the repair may have affected the validity of any previous tests these tests shall be repeated.

Depending on the result of the inspections additional inspections can be necessary.

Where the interior of the tanks is to be inspected the tanks shall be empty, clean and safe to enter (e.g. no electrical services, no heating, safe atmosphere) at the time of inspection. Permits of work according to the legislation dealing with safety and health at work shall be complied with. This is also a requirement when necessary for the safety of the inspecting personnel and any other persons in the vicinity even when other inspections are carried out.