SLOVENSKI STANDARD
SIST EN 12252:2014

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Nadomešča:
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Oprema in pribor za utekočinjeni naftni plin (UNP) - Oprema cestnih cistern za utekočinjeni naftni plin (UNP)

LPG equipment and accessories - Equipping of LPG road tankers

Flüssiggas-Geräte und Ausrüstungsteile - Ausrüstung von Straßentankwagen für Flüssiggas (LPG)

Equipements pour GPL et leurs accessoires - Equipements des camions citernes pour GPL

Ta slovenski standard je istoveten z: **EN 12252:2014**

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LPG equipment and accessories - Equipping of LPG road tankers

Équipements pour GPL et leurs accessoires - Équipements des camions citernes pour GPL

Flüssiggas-Geräte und Ausrüstungsteile - Ausrüstung von Straßentankwagen für Flüssiggas (LPG)

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

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Foreword

This document (EN 12252:2014) has been prepared by Technical Committee CEN/TC 286 “Liquefied Petroleum Gas equipment and accessories”, the secretariat of which is held by NSAI.

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of an identical text or by endorsement, at the latest by October 2014 and conflicting national standards shall be withdrawn at the latest by October 2014.

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.

This document supersedes EN 12252:2012.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document has been submitted for reference into the technical annexes of the ADR [9].

NOTE These regulations take precedence over any clause of this European Standard. It is emphasised that RID/ADR/ADN are being revised regularly at intervals of two years which might lead to temporary non-compliances with the clauses of this European Standard.

The main technical changes of this revision include:

— the update of definitions;

— the modification of requirements on the primary shut-off system (see 6.1.3);

— the modification of the general requirements on the safety system (see 11.1);

— the correction of an error in the flow calculation units (see Annex A).

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, Former Yugoslav Republic of Macedonia, 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.

Introduction

This European Standard calls for the use of substances and procedures that may be injurious to health and also the environment if adequate precautions are not taken. It refers only to technical suitability; it does not absolve the user from their legal obligations at any stage.

Protection of the environment is a key political issue in Europe and elsewhere around the world. Protection of the environment in this document is understood in a very broad sense. The phrase is used, for example, in relation to the total life-cycle aspects of a product on the environment, including expenditure of energy, and during all phases of its existence, from mining of raw materials, fabrication, packaging, distribution, use, scrapping, recycling of materials, etc.

NOTE 1 Annex C comprises an environmental checklist which highlights the clauses of this European Standard that address environmental issues.

Provisions need to be restricted to a general guidance. Limit values are specified in national laws.

It is recommended that manufacturers develop an environmental management policy. For guidance see the ISO 14000 series [3], [4] and [5]

It has been assumed in the drafting of this European Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

All pressures are gauge pressures unless otherwise stated.

NOTE 2 This European Standard requires measurement of material properties, dimensions and pressures. All such measurements are subject to a degree of uncertainty due to tolerances in measuring equipment etc. It might be beneficial to refer to the leaflet “measurement uncertainty leaflet” SP INFO 2000 27 [10].

1 Scope

This European Standard specifies equipment and accessories for road tankers used for the transport of Liquefied Petroleum Gas (LPG) and identifies the equipment that is considered necessary to ensure that filling, transportation and discharge operations can be carried out safely. It specifies the requirements for the assembly of the accessories and the vehicle LPG equipment to the road tanker. This European Standard also identifies additional equipment and accessories that can be used on road tankers carrying LPG.

This European Standard does not preclude the use of alternative designs, materials and equipment testing which provide the same or a higher level of safety. ADR [9] requires that such alternative technical codes be recognised by the competent authority, provided that the minimum requirements of section 6.8.2 of ADR [9] are complied with.

This European Standard does not apply to “tank-containers” or “battery-vehicles” used for the transport of LPG.

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 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 558, *Industrial valves — Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems — PN and Class designated valves*

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

EN 1012-1, *Compressors and vacuum pumps — Safety requirements — Part 1: Air compressors*

EN 1591-1, *Flanges and their joints — Design rules for gasketed circular flange connections — Part 1: Calculation method*

EN 1762, *Rubber hoses and hose assemblies for liquefied petroleum gas, LPG (liquid or gaseous phase), and natural gas up to 25 bar (2,5 MPa) — Specification*

EN 1983, *Industrial valves — Steel ball valves*

EN 1984, *Industrial valves — Steel gate valves*

EN 10025 (all parts), *Hot rolled products of structural steels*

EN 10028 (all parts), *Flat products made of steels for pressure purposes*

EN 10204:2004, *Metallic products — Types of inspection documents*

EN 10216-1, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

EN 10217-1, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

EN 12074, *Welding consumables — Quality requirements for manufacture, supply and distribution of consumables for welding and allied processes*

EN 12493, *LPG equipment and accessories — Welded steel pressure vessels for LPG road tankers — Design and manufacture*

EN 12627, *Industrial valves — Butt welding ends for steel valves*

EN 12760, *Valves — Socket welding ends for steel valves*

EN 13175, *LPG equipment and accessories — Specification and testing for Liquefied Petroleum Gas (LPG) tank valves and fittings*

EN 13709, *Industrial valves — Steel globe and globe stop and check valves*

EN 13789, *Industrial valves — Cast iron globe valves*

EN 13799, *LPG equipment and accessories — Contents gauges for Liquefied Petroleum Gas (LPG) pressure vessels*

EN 14422, *Clamp type coupling assemblies for liquefied petroleum gas (LPG) transfer hoses*

EN 14424, *Hose fittings with screwed ferrules*

EN ISO 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method (ISO 148-1)*

EN ISO 3834-2, *Quality requirements for fusion welding of metallic materials — Part 2: Comprehensive quality requirements (ISO 3834-2)*

EN ISO 3834-3, *Quality requirements for fusion welding of metallic materials — Part 3: Standard quality requirements (ISO 3834-3)*

EN ISO 9606-1, *Qualification testing of welders - Fusion welding - Part 1: Steels (ISO 9606-1)*

EN ISO 10497, *Testing of valves — Fire type-testing requirements (ISO 10497)*

EN ISO 14732, *Welding personnel - Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732)*

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

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)*

3 Terms and definitions

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

3.1
liquefied petroleum gas
LPG
low pressure liquefied gas composed of one or more light hydrocarbons which are assigned to UN 1011, UN 1075, UN 1965, UN 1969 or UN 1978 only and which consists mainly of propane, propene, butane, butane isomers and butene with traces of other hydrocarbon gases

3.2
pressure vessel
assembly of the pressure-retaining envelope (including the openings and their closures) and non-pressure-retaining parts attached directly to it

3.3
primary shut-off system
valve or a series of valves attached to the pressure vessel which provides a method of sealing off the flow from the pressure vessel

3.4
vehicle LPG equipment
equipment and pipework on the road tanker which is in contact with LPG and forms part of the LPG operating system, shut-down system or safety system, but which is not directly connected to the pressure vessel and is not part of the automotive LPG system

3.5
accessories
device connected to the system the main function of which is not for the storage or conveyance of LPG

Note 1 to entry: Referred to as “service and structural equipment” in ADR [9].

3.6
thermowell
permanently sealed pocket in the vessel/pipework for the temperature gauge

3.7
pipework
pressure containing enclosure used for the conveyance of LPG, consisting of pipe, pipe fittings, valves and other accessories

3.8
road tanker
vehicle with a fixed or demountable pressure vessel (tank) having only one compartment

Note 1 to entry: Road tankers are referred to as fixed tanks (tank-vehicles) and demountable tanks in the ADR [9].

3.9
thermal expansion valve
self-closing valve which automatically, without the assistance of any energy other than that of the fluid concerned, discharges fluid at a predetermined pressure

3.10
non-return valve
valve designed to close automatically to restrict reverse flow

3.11
excess flow valve
valve designed to close automatically, with a small residual flow, when the fluid flow passing through it exceeds a predetermined value, and to re-open when the pressure differential across the valve has been restored below a certain value

3.12
shut-off valve
valve to provide a leak-tight seal which is operated either manually, remotely or is self-closing

3.13
pressure relief valve
PRV
self-closing valve which automatically, without the assistance of any energy other than that of the vapour concerned, discharges vapour at a predetermined pressure, and operates with a pop action

3.14
design pressure
DEPRECATED: calculation pressure
pressure used for the calculation of the minimum wall thickness

3.15
gas-free
less than 20 % of the lower explosive limit of LPG in air

3.16
competent person
person which by combination of appropriate qualification, training, experience, and resources, is able to make objective judgments on the subject

3.17
fixed liquid level gauge
gauging device used to indicate when a predetermined liquid level has been reached or surpassed, i.e. a dip tube in combination with a vent valve

3.18
competent authority
authority designated as competent in each country in accordance with national regulations

4 Requirements

4.1 General

4.1.1 The complete road tanker, its equipment and accessories, shall withstand the anticipated mechanical, chemical and thermal stresses without leakage of LPG.

NOTE ADR [9] requires that each new design of a road tanker (tank vehicle) including equipment to be approved by the competent authority.

4.1.2 Equipment and accessories shall be:

— protected against accidental damage where such damage could lead to an unintended escape of LPG;

— able to withstand dynamic stresses due to motion;

— suitably protected if the road tanker rolls over;

— arranged and protected against being wrenched off or damaged during operation;

— suitable to withstand thermal expansion and contraction, mechanical shock and vibration;

— designed to keep openings in the pressure vessel and associated pipework and accessories to a minimum; all other openings shall be fitted with suitable blanking plugs or flanges; and

— manufactured from materials which give the finished equipment the required mechanical properties, in particular, where equipment is subject to the low temperatures (including low temperatures caused by filling), suitably ductile material shall be used.

4.1.3 It is recommended that materials and components be acquired from suppliers who have a declared environmental policy (see EN ISO 14021, EN ISO 14024 and EN ISO 14025).

4.2 Equipment

Mandatory and optional equipment to be fitted to LPG road tankers shall be in accordance with Table 1.

Table 1 — Road tanker equipment

Description	Clauses	Mandatory	Optional
Accessories			
Contents gauge	6.1.1 / 8.2	X	
Pressure gauge	6.1.2 / 8.3	X	
Primary shut-off system	6.1.3	X	
Temperature gauge	6.2 / 8.4		X
Pressure relief valve (PRV)	6.2 / 8.11		X
Sun shield	6.2		X
Vehicle LPG equipment			
Pipework	7.1.2 / 8.1.6	X	
Emergency shut-down system	11.2	X	
Hoses	7.1.3 / 8.6	X	
Thermal expansion valves	7.1.4	X	
Valves	8.10	X	
Compressor	7.2		X
Pump	7.2 / 8.5		X
Hose reel	7.2 / 8.7		X
Metering system	7.2 / 8.9		X
Earth connection	7.1.5	X	
Earth reel	7.2 / 8.8		X

4.3 Valve access

Valves required for normal and emergency operation shall be readily accessible or remotely operated.

5 Pressure vessel

5.1 Design and manufacture

The pressure vessel shall be designed and manufactured in accordance with EN 12493 or an equivalent standard.

5.2 Mounting of pressure vessel on road tanker

5.2.1 General

The pressure vessel and fastenings to the structure of the road tanker shall be designed and constructed to absorb safely the stresses from normal use such as surge, vibration, braking action etc.

5.2.2 Mounting

5.2.2.1 The fixing of the pressure vessel to the road tanker shall be designed in accordance with a calculation based on the forces given in Table 2.

NOTE A sample method of calculation for the mountings of the pressure vessel to the chassis is contained in Annex B.

5.2.2.2 The pressure vessel shall be electrically continuous with the chassis. The resistance of this electrical path shall not exceed 10 Ω.

5.2.2.3 Where the pressure vessel, while on the chassis, will be subjected to a hydraulic test, during which the pressure vessel can contain 2,4 times the normal mass of its normal operating capacity, it shall be established that the chassis is capable of taking this mass without additional support.

Table 2 — Forces for fixing the pressure vessel to the road tanker

Direction of force	Force N
In the direction of travel	2 *g* × total mass of pressure vessel
At right angles to the direction of travel	1 *g* × total mass of pressure vessel
Vertical, upwards	1 *g* × total mass of pressure vessel
Vertical, downwards	2 *g* × total mass of pressure vessel
The total mass of the pressure vessel shall be taken as the tare mass plus the maximum allowable mass of the contents. NOTE *g* = gravitational acceleration.	

6 Pressure vessel accessories

6.1 Required pressure vessel accessories

6.1.1 Contents gauge

6.1.1.1 Pressure vessels shall be equipped with a suitable contents gauge. The requirements of EN 12493 for maximum fill shall apply.

6.1.1.2 Where the contents of the pressure vessel are to be measured by volume rather than by mass, at least two independent systems of measuring the contents shall be fitted, only one of which can be a fixed liquid level gauge.

6.1.2 Pressure gauge

Pressure vessels shall be equipped with a pressure gauge in accordance with 8.3.