



SLOVENSKI STANDARD

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Oprema in pribor za utekočinjeni naftni plin (UNP) - Sistemi za pogon motornih vozil na UNP - Zahteve za vgradnjo

LPG equipment and accessories - Automotive LPG-systems - Installation requirements

Flüssiggas Geräte und Ausrüstungsteile - Systeme für mit Flüssiggas (LPG) betriebene Fahrzeuge - Einbauvorschriften

Équipements pour GPL et leurs accessoires - Véhicules à gaz de pétrole liquéfié (GPL) - Exigences d'installation

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LPG equipment and accessories - Automotive LPG-systems - Installation requirements

Équipements pour GPL et leurs accessoires - Véhicules
à gaz de pétrole liquéfié (GPL) - Exigences
d'installation

Flüssiggas Geräte und Ausrüstungsteile - Systeme für
mit Flüssiggas (LPG) betriebene Fahrzeuge -
Einbauvorschriften

This European Standard was approved by CEN on 27 April 2022.

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

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European foreword

This document (EN 12979:2022) 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of an identical text or by endorsement, at the latest by December 2022, and conflicting national standards shall be withdrawn at the latest by December 2022.

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

This document supersedes EN 12979:2002.

In comparison with the previous edition, the following technical modifications have been made:

- Revised definitions;
- Updated normative references;
- Addition of a new component (5.7.6 "Manual shut-off container valve").

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 12979:2022 (E)**Introduction**

This document specifies requirements for the installation of equipment for the use of Liquefied Petroleum Gas (LPG) in automotive propulsion systems.

This document calls for the use of substances and procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Protection of the environment is a key political issue in Europe and elsewhere, for CEN/TC 286 this is covered in CEN/TS 16765 [3], which should be read in conjunction with this document. The Technical Specification provides guidance on the environmental aspects to be considered regarding equipment and accessories produced for the LPG industry and the following is addressed:

- a) design;
- b) manufacture;
- c) packaging;
- d) use and operation; and
- e) disposal.

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

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SIST EN 12979:2022

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1 Scope

This document specifies the requirements for the installation of automotive LPG components that comply with EN 12805 and EN 12806.

These requirements are to ensure safe operation of such components.

This document does not cover type approval of LPG motor vehicles.

NOTE Type approval requirements are covered in UN/ECE Regulations and EU legislation.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 630-4, *Structural steels — Part 4: Technical delivery conditions for high yield strength quenched and tempered structural steel plates and wide flats*

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*

EN 12805, *Automotive LPG components - Containers*

EN 12806, *Automotive liquefied petroleum gas components - Other than containers*

EN 16652-2, *LPG equipment and accessories - Automotive LPG vehicles workshops - Part 2: Personnel competence and training*

EN 60529, *Degrees of protection provided by enclosures (IP Code)*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org/>

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, butene with traces of other hydrocarbon gases

Note 1 to entry: For automotive LPG specification, see EN 589.

3.2

automotive LPG-system

assembly of components enabling a vehicle to use automotive LPG in its propulsion system

Note 1 to entry: Requirements for each components are specified in their specific annexes.

EN 12979:2022 (E)**3.3****container**

pressure vessel used for the storage of automotive LPG

3.4**electronic control unit****ECU**

device that controls the LPG supply to the engine and the electrical power supply to the remote-controlled service valves

3.5**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

3.6**filling unit**

device installed on the outside of the vehicle to receive the filling nozzle and enable the filling of the LPG container

3.7**flexible hoses**

flexible ducts that convey LPG liquid or vapour at various pressures from one point to another

3.8**fuel rail**

pipe or flexible hose that supplies the fuel to the injection devices

3.9**gas-tight housing**

device that vents any leak from components fitted to the container to the venting tube

Note 1 to entry: It also collects and ducts any leaks to the outside of the vehicle, where necessary through a connecting hose and a lead-through.

3.10**gas tube**

tubing made of metallic material which has been designed not to flex in normal operation and through which LPG flows

3.11**level indicator**

device that indicates the liquid level in the container

3.12**non-return valve**

valve designed to close automatically to prevent reverse flow

3.13**pressure relief device****PRD**

device protecting the container from bursting, when exposed to fire, by venting LPG at a pre-set temperature and/or pressure

3.14**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

Note 1 to entry: This is known as a “safety valve” in ADR.

3.15**remote-controlled service valve with excess flow valve**

device that allows or interrupts the LPG supply to the vaporizer/pressure regulator, which is operated remotely and is combined with an excess flow valve

3.16**remote-controlled shut-off valve**

valve to provide a leak-tight seal which is remotely operated

3.17**service coupling**

connector in the fuel line between the container and the engine for emergency fuelling

Note 1 to entry: If a mono-fuel vehicle is out of fuel, the engine can be operated by means of a service container coupled to the service coupling.

3.18**type of automotive LPG-system**

LPG-system or family of LPG-systems which have the following characteristics in common:

- automotive LPG-system manufacturer;
- pressure regulator/vaporizer type and manufacturer;
- gas fuelling system type and manufacturer, i.e. induction mixer, injector device, vapour or liquid, single or multipoint injection system:
 - sensors;
 - container type and manufacturer;
 - container accessories type and manufacturer;
 - container frame;
 - Electronic Control Unit (ECU) type by the same manufacturer;
 - basic software as far as safety issues are concerned;
 - installation manual;
 - user manual

3.19**venting tube**

duct that connects the gas-tight housing to the atmosphere

EN 12979:2022 (E)**3.20****vehicle type**

vehicle or family of vehicles which have the following characteristics in common:

- the manufacturer's type designation;
- the essential aspects of design and construction;
- chassis/floor-pan;
- installation of the LPG equipment

3.21**maximum allowable pressure****PS**

maximum pressure for which the equipment is designed

Note 1 to entry: All pressures are gauge pressures, unless otherwise stated.

3.22**80 % stop valve**

device that limits the filling of the container to 80 % of the water capacity and acts as a non-return valve

3.23**manual shut-off container valve**

manually operated shut-off valve which is rigidly fixed to the container

4 Symbols and abbreviated terms

EMC Electro-Magnetic Compatibility

g acceleration due to gravity

PRV Pressure Relief Valve

PRD Pressure Relief Device

5 Installation requirements**5.1 General requirements**

The installer of the automotive LPG-system shall ensure that:

- they possess the expertise and the equipment necessary for the proper installation of the automotive LPG-system, according to EN 16652-2 requirements;

NOTE National regulations can apply.

- they operate according to a quality control system that ensures that the installation of the automotive LPG-system meets the requirements of this document;
- they maintain records of the leak test and start-up operations that are carried out after the installation;
- the automotive LPG-system installed in the vehicle functions in such a way that the pressure for which it has been designed and approved cannot be exceeded;

- all components of the automotive LPG-system comply with EN 12805 and EN 12806;
- additional equipment required for the effective operation of the engine, not covered by EN 12805 and EN 12806 are installed only in parts of the automotive LPG-system where the pressure is less than 20 kPa;
- all parts of the system are securely fastened;
- the automotive LPG-system has been tested and corrected for leaks;
- the automotive LPG-system is installed in such a way that it is adequately protected against damage due to moving vehicle components, collision, grit or to the loading or unloading of the vehicle or the shifting of those loads;
- all components are installed so that it is possible to inspect them and the relevant markings can be read;
- excluding the container, no component of the automotive LPG-system, including any protective material that form part of such components, projects beyond the external surface of the vehicle, with the exception of the vehicle connector if this does not project more than 10 mm beyond the nominal line of the body panel;
- no component of the automotive LPG-system, including its protective material if applicable, excluding the container, is installed below the lower edge of the vehicle;
- no component of the automotive LPG-system is located within 100 mm of the exhaust or similar heat source, unless adequate shielding against heat is provided;
- the installation of the automotive LPG-system complies with the relevant electro-magnetic compatibility (EMC) requirements.

In case of a retrofit installation of the automotive LPG-system, the manufacturer of the system shall supply installation instructions to the installer of the automotive LPG-system.

5.2 Connections to automotive LPG-system

No appliances shall be connected to the propulsion system other than those strictly required for the proper operation of the engine of the motor vehicle.

Motor vehicles of categories M₂, M₃, N₂, N₃ and M₁ having a maximum total mass of more than 3 500 kg fitted with a compartment heating system which is connected to the automotive LPG-system shall be adequately protected against unintended gas escape and the operation of the LPG propulsion system shall not be affected.

NOTE For vehicle categories, refer to Directive 2007/46/EC.

Cooking appliances connected to the vapour phase of the container shall be adequately protected against unintended gas escape and the operation of the LPG propulsion system shall not be affected.

Heating and/or cooking system shall not be connected to the liquid phase of the container. The vapour take-off system shall be protected by a manual or remotely controlled shut-off valve incorporating an excess flow, fitted to the container.

If a mono fuel vehicle with a petrol limp home system is equipped with a service coupling in the automotive LPG-system then this coupling shall be adequately protected by the installation of a non-return valve between the container and the service coupling and it shall be possible to only operate the engine via this coupling. Vehicles provided with a service coupling shall have a sign in the form of a sticker in accordance with Annex B, near the service coupling.