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Oprema in pribor za utekočinjeni naftni plin (UNP) - Postopek polnjenja in praznjenja cestnih cistern za UNP

LPG equipment and accessories - Filling and discharge procedures for LPG road tankers

Flüssiggas-Geräte und Ausrüstungsteile - Füll- und Entleerungsverfahren für Straßentankfahrzeuge für Flüssiggas (LPG)

Équipements et accessoires pour GPL - Procédures de chargement et déchargement des camions-citernes pour GPL

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EUROPEAN STANDARD

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LPG equipment and accessories - Filling and discharge procedures for LPG road tankers

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Flüssiggas-Geräte und Ausrüstungsteile - Füll- und Entleerungsverfahren für Straßentankfahrzeuge für Flüssiggas (LPG)

This European Standard was approved by CEN on 24 April 2023.

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<https://standards.iteh.ai/catalog/standards/sist/a26769cc-c242-4535-8cf2-c9df77cb2c13/sist-en-13776-2023>



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 13776:2023) 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of an identical text or by endorsement, at the latest by November 2023, and conflicting national standards shall be withdrawn at the latest by November 2023.

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 13776:2013.

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

- Removal of the previous Annex A giving a table of LPG mixtures;
- A new Annex A was added giving recommendations on the personal protection equipment;
- Removal of Annex B on the Environmental checklist;
- Addition of a reference to CEN/TS 16765;
- Updating of the Introduction;
- A requirement was added to 5.1.3 that all electrical equipment required for the filling process shall be suitable for the hazardous zone according to ATEX;
- Both the filling and the discharge requirements were harmonized with the ones for rail tanker in EN 14841;
- References and clarifications concerning ADR [5] were added to improve clarity.

This document will be submitted for reference in:

- the RID; and/or
- the technical annexes of the ADR [5].

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

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, Türkiye and the United Kingdom.

EN 13776:2023 (E)**Introduction**

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.

The frequencies of the different types of pressure vessel inspection are given by the relevant international regulations concerning the transport of dangerous goods.

Protection of the environment is a key political issue in Europe and elsewhere. For CEN/TC 286 this is covered in CEN/TS 16765 [1], and this Technical Specification should be read in conjunction with this document. CEN/TS 16765 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 is recommended that companies using this document develop an environmental management policy. For guidance, see EN ISO 14001 [2].

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

All pressures are gauge pressures unless otherwise stated.

NOTE This document 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 can be beneficial to refer to the leaflet "Measurement uncertainty leaflet" SP INFO 2000 27 [4].

1 Scope

This document specifies filling, discharge and emergency procedures for road tankers equipped in accordance with EN 12252 used for the transport of liquefied petroleum gas (LPG).

This document does not apply to “batteries of receptacles”.

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.

EN 12252, *LPG equipment and accessories - Equipping of LPG road tankers*

CEN/TS 16769, *LPG equipment and accessories - Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CEN/TS 16769 apply.

ISO and IEC maintain terminology 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/>

4 General

4.1 Safety systems as required by EN 12252 shall be used. Personnel carrying out LPG transfer operations shall wear personal protection equipment. Recommendations for personal protection equipment are given in Annex A. The operations of filling and discharging shall be done under constant supervision.

NOTE Recommendations for personal protection equipment are given in Annex A.

4.2 The filling and discharge areas shall be inspected for fire hazards prior to beginning operations. Suitable fire protection shall be readily available.

NOTE Responsibilities for fire protection are subject to national regulations.

4.3 Written procedures and other appropriate information shall be made readily available, understood and followed by those undertaking filling and discharging procedures.

NOTE ADR [5] requires drivers to have an ADR driver training certificate as given in part 8 of ADR.

Consideration shall be given to include specific instructions for the use of the road tanker's LPG equipment and fixed LPG installation relevant to the operations in the training programme. These instructions shall be based on risk assessment and address all requirements of Clauses 5 and 6.

4.4 Written procedures shall be readily available, understood and followed. This shall be achieved by training and supervision. The responsibilities of all persons involved in the operation shall be clearly defined.

EN 13776:2023 (E)**5 Filling****5.1 Preparation for filling**

5.1.1 The vehicle shall be driven to the filling area and positioned in accordance with the site procedure.

5.1.2 Any device intended to or provided to check the loaded quantity shall be operational and in the correct position.

5.1.3 All road tanker electrical equipment not required for the filling process shall be switched off. Any other sources of ignition shall be removed/de-activated. All electrical equipment required for the filling process shall be suitable for the hazardous zone according to ATEX.

NOTE Refer to Directive 2014/34/EU [7] and EN IEC 60079-10-1:2021 [3].

5.1.4 The handbrake shall be applied and, where required, the wheel chock put in place. Anti-drive-away system interlock/installation barriers shall be engaged.

5.1.5 The electrostatic potential of the road tanker and the discharging pressure vessel shall then be equalised before the LPG hoses or loading arms are connected.

5.1.6 All road tanker valves shall be checked to ensure that they are in the closed position.

5.1.7 Blanking caps or blind flanges shall be removed from the liquid and vapour connections (where fitted and when used) to be used.

5.1.8 Ensure that the site is safe for filling LPG and adequate ullage capacity is available. Specific requirements for this shall be part of the site procedures, if applicable.

5.1.9 Hoses and loading arms shall be checked for kinks, wear or obvious damage. Fill-couplings, seals and necessary attachments shall be examined to ensure compatibility and that no dirt or any other foreign matter is present before connection.

5.1.10 Connections shall be properly made before starting to fill. Hoses/loading arms shall not be fully extended in making the connections. A check shall be made for any sign of leakage before filling commences. Any leakage shall be rectified before proceeding.

5.1.11 Precautions shall be taken to ensure that the grade of LPG to be filled is correctly identified and that the road tanker is suitable for the intended load and that it is correctly labelled (see ADR, 4.3.3.2.5 [5]).

NOTE In the ADR [5] the terms "placarding" and "orange-coloured plate marking" are used in place of "labelling".

5.1.12 Where fitted, tanker loading control systems shall be connected.

5.2 Filling operations

Transfer couplings (hoses or loading arms) shall be connected without submitting them to any abnormal stresses. The road tanker, product terminal and vapour return valves, where applicable, shall be opened in the required sequence and manner in accordance with the written procedures. The connections between the transfer couplings and the road tanker shall be checked for leakage. Further periodic leakage checks shall be carried out directly after the product transfer operation has begun. In case any leakage is

detected, the filling operations shall be stopped immediately in order to make the transfer couplings gas-tight.

It can be necessary to reduce the transfer rates in order to ensure that the maximum fill is not exceeded.

5.3 Completion of filling

5.3.1 The filling shall be stopped when the maximum fill level of the receiving road tanker is reached.

5.3.2 The road tanker, product terminal and vapour return valves, where applicable, shall be closed in the required sequence and manner in accordance with the written procedures ensuring that valves closest to the pressure vessel of the vehicle are closed first.

5.3.3 Any LPG between the transfer couplings shall be vented in a safe manner before fully disconnecting.

5.3.4 After disconnection of the filling line and any other connections to the road tanker (vapour return or tanker loading control) all road tanker valves shall be properly closed and the caps secured in place.

5.3.5 A final check shall be made to ensure that the road tanker is in a fit condition to be driven away. There shall be no sign of leakage. The connection made to equalize the electrostatic potential shall be disconnected. The connection for equalising the electrostatic potential of the discharging road tanker and the receiving pressure vessel shall not be disconnected until hoses/loading arms are disconnected and stowed.

5.3.6 Anti-drive-away system interlock/installation barriers shall be disengaged.

5.3.7 The completeness and correctness of the required documentation shall be verified.

5.3.8 The correct quantity of LPG loaded (as per dataplate of the pressure vessel; see ADR, 4.3.3.2.5 [5]) shall be verified. Before leaving the site, verification that the road tanker displays the appropriate hazard warning shall be ensured.

5.4 Precautions against overfilling

5.4.1 The gross vehicle weight shall not be exceeded when the weight of the road tanker's fuel and the driver are taken into account.

5.4.2 Gauging devices shall be monitored continuously during the filling operation, to ensure that the road tanker is not overfilled.

5.4.3 If a road tanker is accidentally overfilled the excess LPG shall be removed in a controlled manner without delay, before departure of the road tanker.

5.4.4 When filling by weight, the tare of the vehicle shall be determined i.e. by weighing before every filling operation to ensure that the vehicle is not overfilled.

6 Discharge

6.1 Preparation for discharge

6.1.1 The suitability of the pressure vessel to receive the LPG product to be discharged shall be ensured.

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6.1.2 The vehicle shall be positioned so that the driver has access to:

- the road tanker;
- the vehicle flow meter (where fitted); and
- the receiving pressure vessel contents gauge and fixed liquid level gauge.

6.1.3 The handbrake shall be applied and, where required, the wheel chock put in place. Anti-drive-away system interlock/installation barriers shall be engaged.

6.1.4 The electrostatic potential of the road tanker and the fixed installation shall be equalised before the LPG hoses are connected.

6.1.5 The immediate surroundings of the pressure vessel shall be checked to ensure there are no potential sources of ignition or any obvious dangers. The area around the road tanker shall be checked to ensure that it is safe to allow LPG to be discharged.

NOTE 1 Required distances can be subject to national regulations.

NOTE 2 Refer to Directive 1999/92/EC [8].

6.1.6 Care shall be taken to avoid damage to the hose caused by:

- a) running hoses across sharp objects; or
- b) heat sources and naked flames.

6.1.7 Hoses shall normally be routed in the open air. Where hoses are routed through enclosed spaces, access by the public shall be restricted and the area shall be under the direct control of the driver. Where direct control by the driver cannot be ensured, a special procedure shall apply.

6.1.8 Where hoses are run across pavements or foot paths during road side deliveries, a pictogram or warning sign shall be prominently displayed, e.g.

“FLAMMABLE GAS TRANSFER TAKING PLACE – NO SMOKING OR NAKED FLAMES”.

NOTE National regulations and/or laws regarding road side deliveries can apply.

6.1.9 Delivery hoses shall be visually examined for kinks, wear or obvious damage. If they show wear or damage, they shall not be used in discharge operations until rectified.

6.1.10 Hose couplings and seals shall be examined to ensure compatibility and that no dirt or any other foreign matter is present before connection.

6.1.11 All road tanker outlets and internal valves shall be checked to ensure that they are in the closed position.

6.1.12 Where used the blanking cap shall be removed from the liquid inlet and vapour return connections.

6.1.13 Where fitted, road tanker filling control systems shall be connected.

6.1.14 During road side delivery at night or during bad visibility the road tanker lighting shall be kept on or other suitable lighting shall be provided.