

BS EN 14841:2013



BSI Standards Publication

LPG equipment and accessories — Discharge procedures for LPG rail tankers

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National foreword

This British Standard is the UK implementation of EN 14841:2013. It supersedes BS EN 14841:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PVE/19, LPG containers and their associated fittings.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

LPG equipment and accessories - Discharge procedures for LPG rail tankers

Équipements pour GPL et leurs accessoires - Procédures
de déchargement des wagons-citernes pour GPL

Flüssiggas-Geräte und Ausrüstungsteile -
Entleerungsverfahren für Eisenbahnkesselwagen für
Flüssiggas (LPG)

This European Standard was approved by CEN on 19 October 2013.

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Foreword

This document (EN 14841:2013) 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of an identical text or by endorsement, at the latest by June 2014 and conflicting national standards shall be withdrawn at the latest by June 2014.

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Introduction

Protection of the environment is a key political issue in Europe and elsewhere. Protection of the environment is taken in a very broad sense. What is meant is the total life cycle aspects of, e.g. a product on the environment, including expenditure of energy and during all phases from mining of raw materials, fabrication, packaging, distribution, use, scrapping, recycling of materials, etc.

NOTE Annex A indicates which clauses in this standard address environmental issues.

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

It is recommended that companies using this standard develop an environmental management policy. For guidance see ISO 14000 series.

1 Scope

This European Standard specifies discharge, handling operations and emergency procedures for rail tankers used for the transport of liquefied petroleum gas (LPG).

This European Standard applies to operations where LPG is discharged from rail tankers into LPG fixed storage facilities.

This European Standard does not apply to “tank containers” and “batteries of receptacles”.

2 Terms and definitions

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

2.1

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

2.2

competent person

person who, by a combination of appropriate qualification, training, experience and resources, is able to make objective judgements on the subject

2.3

anti-drive-away interlock

method of ensuring that if the rail tanker is accidentally moved while connected there is no uncontrolled release of LPG

3 General

Handling operations such as:

- accepting rail tankers upon arrival;
- discharge of LPG; and
- preparation and returning rail tanker

shall be carried out under the supervision of a competent person (e.g. operator of the site) and shall be in accordance with the site procedures.

4 Procedures

4.1 General

Site procedures including emergency procedures shall be available, understood and followed by all persons involved in each operation. This shall be achieved by training and supervision. The responsibilities of the persons involved shall be clearly defined.

The procedures shall include a check of the rail tanker that is to be carried out before it is accepted. This shall include:

- the marking;

- a check of the integrity of the rail tanker;
- a check of tamper evident seals; and
- an identification check of LPG quality and grade.

Where deficiencies are found they shall be recorded and reported to the appropriate body (e.g. rail tanker loader) and the rail tanker operator. A rail tanker shall not be discharged until any necessary remedial work has been completed.

Copies of checklists and deficiency reports shall be retained.

4.2 Discharge procedures/operations

4.2.1 The rail tanker shall be moved to the discharge area and positioned as required by the site procedures.

4.2.2 Parking brakes or other equivalent means shall be applied to prevent unintended movement of the rail tanker during discharge. The site, where the rail tankers are parked for discharging, shall be isolated from other rail traffic. If fitted, anti-drive-away interlocks shall be engaged.

4.2.3 Personnel carrying out LPG transfer operations shall wear personal protection equipment according to applicable regulations. Discharging shall be done under the constant supervision of a competent person.

4.2.4 The electrostatic potential of the rail tanker and the fixed installation shall then be equalised before the LPG hoses or loading arms are connected.

4.2.5 All rail tanker outlet valves shall be checked to ensure that they are in the closed position.

4.2.6 Blanking caps or blind flanges shall be removed from the liquid and vapour connections to be used.

4.2.7 Ensure that the site is safe for discharging LPG and adequate storage capacity is available. Specific requirements for this shall be part of the site procedures.

4.2.8 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.

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

4.2.10 If the rail tanker is equipped with foot valve(s) an emergency ripcord shall be connected to the rail hook that will shut down the foot valve in the event of unintended movement of the rail tanker.

4.2.11 Valves shall be opened in the prescribed sequence as stated by the site procedure.

4.2.12 The delivery shall be stopped when the maximum fill level in the receiving tank is reached or the rail tanker is empty.

Transfer rates may need to be reduced to ensure that the maximum fill is not exceeded.

4.2.13 Valves shall be closed in the prescribed sequence as stated in the site procedure and the ripcord shall be disconnected.

4.2.14 After disconnection of the filling line and any other connections to the tanker (vapour return or tanker loading control) all rail tanker valves shall be properly closed and the lines stowed. Blanking caps and blind flanges shall be secured in place and checked for leaks.

4.2.15 Anti-drive-away interlocks shall stay engaged until the rail tanker can be safely moved.

4.2.16 The connection for equalising the electrostatic potential of the rail tanker and the fixed installation shall not be disconnected until hoses/loading arms are disconnected and stowed.

4.3 Discharging by pumps

4.3.1 When discharging a rail tanker with a pump it is not essential to connect the vapour return line.

4.3.2 Operating and safety requirements as stipulated by the pump manufacturer shall be adhered to.

4.3.3 The pumps shall be protected against damage due to dry running/cavitation.

4.4 Discharging by compressor

4.4.1 When discharging a rail tanker using a compressor it is essential to have the vapour return line connected and open before starting the compressor.

4.4.2 Operating and safety requirements stipulated by the compressor manufacturer shall be adhered to.

4.4.3 Care shall be taken to avoid exceeding the maximum allowable working pressure of the rail tanker and the receiving tank.

4.4.4 Where vapour recovery is required the liquid outlet valve shall be closed. The compressor valving shall be set for vapour recovery. Care shall be taken not to decrease the pressure in the rail tanker below the pre-defined safe pressure level.

Advantage of any existing pressure differentials should be taken when starting the discharge procedure before starting the compressor.

Negative pressure shall be avoided in the rail tanker because of the danger of air ingress into the rail tanker and possible mechanical damage to the pressure envelope.

5 Emergency procedure

The overall site emergency procedures shall include at least the following for the rail tanker discharge operations:

- notification/raising of the alarm;
- evacuation plan;
- LPG leakage;
- LPG fire including fire fighting plan;
- accidents;
- return to service; and
- incident/accident investigation and corrective actions.

Annex A
(informative)

Environmental checklist

Table A.1

Environmental Aspect	Stages of the life cycle										All stages
	Acquisition		Production		Use			End-of-Life			
	Raw materials and energy	Pre-manufactured materials and components	Production	Packaging	Use	Maintenance and repair	Use of additional products	Reuse / Material and Energy Recovery	Incineration without energy recovery	Deposition	
Inputs											
Materials											
Water											
Energy											
Land											
Outputs											
Emissions to air					4.2						
Discharges to water											
Discharges to soil											
Waste											
Noise, vibration, radiation, heat losses					4.3 4.4						
Other relevant aspects											
Risk to the environment from accidents or unintended use					4.2 4.3 4.4						
Customer information											

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