



SLOVENSKI STANDARD
oSIST prEN 13807:2025
01-januar-2025

Premične plinske jeklenke - Baterijska vozila in MEGC - Načrtovanje, izdelava, označevanje in preskušanje

Transportable gas cylinders - Battery vehicles and multiple-element gas containers (MEGCs) - Design, manufacture, identification and testing

Ortsbewegliche Gasflaschen - Batterie-Fahrzeuge und Gascontainer mit mehreren Elementen (MEGCs) - Auslegung, Herstellung, Kennzeichnung und Prüfung

Bouteilles à gaz transportables - Véhicules-batteries et conteneurs à gaz à éléments multiples (CGEM) - Conception, fabrication, identification et essai

Ta slovenski standard je istoveten z: prEN 13807

[oSIST prEN 13807:2025](https://standards.sist.si/standards/sist/prEN/13807/2025)

ICS:

23.020.35	Plinske jeklenke	Gas cylinders
43.160	Vozila za posebne namene	Special purpose vehicles

oSIST prEN 13807:2025

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 13807

December 2024

ICS 43.160; 23.020.35

Will supersede EN 13807:2017

English Version

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 23.

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

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European foreword

This document (prEN 13807:2024) has been prepared by Technical Committee CEN/TC 23 “Transportable gas cylinders”, the secretariat of which is held by BSI.

This document will supersede EN 13807:2017

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

This document will be submitted for reference into the technical annexes of the ADR [15].

The main technical changes are:

- a) clarification of scope;
- b) revision of definitions;
- c) clarification of operation temperature for the pressurized and non-pressurized components
- d) more details in chapter mounting to clarify the request;
- e) special requirement of forming the manifold in hydrogen service;
- f) clarification of leakage check after assembling and initial filling with gas in use.
- g) add an annex for vibration test

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prEN 13807:2024 (E)

Introduction

For certain applications, transport units known as battery vehicles and MEGCs of non-UN pressure receptacles are used to supply greater volumes of gas in a single unit.

A battery vehicle is a vehicle containing pressure receptacles which are linked to each other by a manifold and permanently fixed to a transport unit.

General requirements for the design, construction, equipment, type approval, inspections and tests and marking of battery vehicles are given in Chapter 6.8 and 9 of the ADR. Some specific or additional requirements are given in this document.

In standards, weight is equivalent to a force, expressed in Newton. However, in common parlance (as used in terms defined in this document), the word “weight” continues to be used to mean “mass”, but this practice is deprecated (ISO 80000-4).

In this document, the unit bar is used, due to its universal use in the field of technical gases. It should, however, be noted that bar is not an SI unit, and that the according SI unit for pressure is Pa ($1 \text{ bar} = 10^5 \text{ Pa} = 10^5 \text{ N/m}^2$).

Pressure values given in this document are given as gauge pressure (pressure exceeding atmospheric pressure) unless noted otherwise.

Where there is any conflict between this document and any applicable regulation, the regulation always takes precedence.

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1 Scope

This document specifies the requirements for the design, manufacture, identification and testing of battery vehicles and multiple-element gas containers (MEGCs) containing cylinders, tubes, or bundles of cylinders. This document applies also to battery vehicles and MEGCs containing bundles of cylinders connected by a manifold which are dis-assembled from the battery vehicle and filled individually.

It is applicable to battery vehicles and MEGCs containing compressed gas, liquefied gas, and mixtures thereof. It is also applicable to battery vehicles for dissolved acetylene. This document is not applicable to battery vehicles and MEGC for toxic gases with an LC₅₀ value less than or equal to 200 ml/m³.

This document does not apply to battery vehicles and MEGCs containing pressure drums or tanks.

This document does not specify requirements for the vehicle chassis or motive unit.

This document is primarily intended for industrial gases other than Liquefied Petroleum Gases (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 13134, *Brazing - Procedure approval*

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

EN ISO 10286:2021, *Gas cylinders - Vocabulary (ISO 10286:2021)*

EN ISO 10297, *Gas cylinders - Cylinder valves - Specification and type testing*

EN ISO 23826, *Gas cylinders - Ball valves - Specification and testing*

EN ISO 10961, *Gas cylinders - Cylinder bundles - Design, manufacture, testing and inspection*

EN ISO 13585, *Brazing - Qualification testing of brazers and brazing operators*

EN ISO 14113, *Gas welding equipment - Rubber and plastics hose and hose assemblies for use with industrial gases up to 450 bar (45 MPa)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials - General rules*

EN ISO 15615:2022, *Gas welding equipment - Acetylene manifold systems for welding, cutting and allied processes - Safety requirements in high-pressure devices (ISO 15615:2022)*

ISO 1496-3, *Series 1 freight containers — Specification and testing — Part 3: Tank containers for liquids, gases and pressurized dry bulk*

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

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 10286:2021 and the following apply.

**3.1
pressure receptacle**
transportable receptacle intended for holding substances under pressure including its closure(s) and other service equipment

Note 1 to entry: It is a collective term that includes cylinders, tubes, pressure drums, closed cryogenic receptacles, metal-hydride storage system, bundle of cylinders and salvage pressure receptacles

[SOURCE: EN ISO 10286:2021, 3.1.1.1, modified — Example removed.]

**3.2
battery vehicle**
vehicle containing pressure receptacles which are linked to each other by a manifold and permanently fixed to a vehicle such that the assembly is filled, transported and emptied as a single unit

[SOURCE: EN ISO 10286:2021, 3.1.1.12, modified — “elements” replaced by “pressure receptacles” and replaced “transport unit” with “vehicle such that the assembly is filled, transported and emptied as a single unit”.]

**3.3
multiple-element gas container
MEGC**
unit containing cylinders, tubes or bundles of cylinders which are linked to each other by a manifold and mounted on a frame

Note 1 to entry: This definition is different but not in contradiction with the one given in RID/ADR/ADN:2023[5] because it aims to reflect the scope of this document which excludes pressure drums and tanks.

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**3.4
manifold**
piping system for connecting pressure receptacle(s) valves or fittings to the main valve(s) or the main connection(s)

[SOURCE: EN ISO 10286:2021, 3.1.5.2, modified — Example removed.]

**3.5
pressure receptacle valve**
valve that is fitted into a pressure receptacle and to which a manifold is connected

**3.6
pressure receptacle fitting**
component with no gas shut-off capability that serves as a method for connecting a manifold to individual pressure receptacle, when valves are not fitted to the pressure receptacles

[SOURCE: EN ISO 10286:2021, 3.1.5.5, modified — Term “cylinder fitting” replaced with “pressure receptacle fitting”, domain in angle brackets removed, “cylinders or tubes” replaced by “pressure receptacles” and Note to entry deleted.]

3.7**main connection**

means of making a gas connection to a battery vehicle/MEGC

[SOURCE: EN ISO 10286:2021, 3.1.5.3, modified — “Bundle” deleted from list.]

3.8**main valve**

valve which is fitted to the manifold of a battery vehicle or MEGC isolating it from the main connection(s)

[SOURCE: EN ISO 10286:2021, 3.1.5.4., modified — Bundle of cylinders and battery wagon deleted from list, alternative and deprecated terms deleted.]

3.9**tare**

<battery vehicle>/<MEGC> weight of the battery vehicle or MEGC when empty, including accessories fitted as presented for filling

[SOURCE: EN ISO 10286:2021, 3.5.43, modified — removed deprecated term, replaced “<general>” with “<battery vehicle>/<MEGC>” and “pressure receptacle” with “battery vehicle or MEGC”.]

3.10**maximum gross weight**

<battery vehicle>/<MEGC> sum of the tare of battery vehicle or MEGC and the maximum weight of the gas product

[SOURCE: EN ISO 10286:2021, 3.5.41, modified — replaced “<cylinder bundles>” with “<battery vehicle>/<MEGC>”, “bundle” with “battery vehicle or MEGC”, and replaced “maximum permissible filling weight” with “maximum weight of the gas product”.]

3.11**maximum filling weight**

for liquefied gases (e. g. SF₆) sum of the minimum guaranteed water capacity of all pressure receptacles of the battery vehicle or MEGC multiplied with the filling ratio of the gas contained

[SOURCE: EN ISO 10286:2021, 3.5.38, modified — included Note 1 to entry to definition by replacing “product” by “for liquefied gases (e. g. SF₆) sum” and replaced “the pressure receptacle” with “all pressure receptacle of the battery vehicle or MEGC” and replaced “multiplied with” with “and the”.]

3.12**working pressure**

<compressed gas> settled pressure of a compressed gas at a uniform reference temperature of 15 °C in a full battery vehicle or MEGC

[SOURCE: EN ISO 10286:2021, 3.5.30, modified — “gas cylinder” replaced by “battery vehicle or MEGC”]

3.13**maximum developed pressure**

pressure developed by the gas contents in a battery vehicle or MEGC at a uniform temperature of T_{\max}
Note 1 to entry: T_{\max} is the expected maximum uniform temperature in normal service as specified in international or national cylinder filling regulations.

[SOURCE: EN ISO 10286:2021, 3.5.27, modified — “cylinder” replaced by “battery vehicle or MEGC”, added “of T_{\max} ” to definition.]

prEN 13807:2024 (E)**3.14****leak test gas**

gas or gas mixture used for leak testing

3.15**acetylene battery vehicle**

assembly of acetylene cylinders or acetylene bundles of cylinders connected to a manifold and securely mounted onto a vehicle chassis such that the assembly is transported and emptied as a single unit

3.16**acetylene battery vehicle type A**

acetylene cylinders or acetylene bundles of cylinders that are removed each time from the vehicle and filled individually

3.17**acetylene battery vehicle type B**

acetylene cylinders or acetylene bundles of cylinders that are filled and emptied for a prescribed number of re-fillings without removal from the vehicle

3.18**home station of the acetylene battery vehicle**

location (name of the company, address and telephone number) where the documentation is kept

3.19**tare**

<acetylene battery vehicle> sum of the tare weights of the individual cylinders (see EN ISO 3807) or bundles of cylinders (see EN ISO 13088) plus the weight of the associated manifold, fittings, supports and the chassis

3.20**maximum gross weight**

acetylene battery vehicle sum of the total weight of the individual filled cylinders or the maximum gross weight of the individual acetylene bundles of cylinders plus the weight of the associated manifold, fittings, supports and the vehicle chassis

Note 1 to entry: In RID/ ADR the term "Total Mass" is used

3.21**maximum acetylene content**

<acetylene battery vehicle> sum of the specified maximum weight of acetylene including saturation acetylene in the pressure receptacles

3.22**dimensioning pressure**

<acetylene battery vehicles> pressure taking into account the pressure increase caused by the decomposition of acetylene

Note 1 to entry: It is used for the dimensioning of the manifold, hoses, valves and fittings.

3.23**working pressure**

<acetylene battery vehicles> pressure equal to the working pressure stamped on the individual pressure receptacles of the battery vehicle

3.24

maximum filling pressure

<acetylene battery vehicles> highest pressure which is allowed in an acetylene battery vehicle manifold during filling

Note 1 to entry: It is 25 bar gauge, see A.2.5.3.

3.25

acetylene decomposition blocker

safety device that stops acetylene decomposition at a pressure of ≤ 25 bar

Note 1 to entry: The decomposition blocker for high-pressure acetylene can optionally comprise other safety elements such as non-return valve or automatic quick-acting shut-off device (see ISO 15615).

[SOURCE: EN ISO 10286:2021, 3.1.4.13]

4 Design

4.1 General

All pressurized components shall be designed to operate in the temperature range of at least -20 °C to $+65$ °C. All other parts such as frame, fastenings, etc. shall be designed to operate in the temperature range of at least -20 °C to $+50$ °C.

The design requirements given in Clause B.2 are minimum requirements. The agreement of stricter requirements is permitted.

NOTE 1 Local temperature conditions can necessitate higher or lower service temperatures.

NOTE 2 Additional requirements can be required for adapted equipment and/or tests.

NOTE 3 Pressure components and the frame, fastenings etc. can have different operating temperatures (see marking Clause B.2)

Materials for parts which are in contact with the gas shall be selected in accordance with EN ISO 11114-1 and EN ISO 11114-2.

For battery vehicles and MEGCs which are filled by weight, the tare used as a reference for filling shall be clearly identified taking into account removable components, where applicable.

For all gases consideration shall be given regarding the risk of accumulation of gases (e.g. explosive atmosphere, anoxia) by permeation (as applicable) and leak rates by taking into account all possible confined volumes (if any).

For acetylene battery vehicles, additional requirements apply on certain subjects. These are specified in Annex A.

4.2 Mounting

4.2.1 Stability (for battery vehicles only)

The overall width of the ground-level bearing surface (distance between the outer points of contact with the ground of the right-hand tyre and the left-hand tyre of the same axle) of the axle with greatest width shall be at least equal to 90 % of the height of the centre of gravity of the laden battery vehicle. In an articulated vehicle the mass on the axles of the load-carrying unit of the laden semi-trailer shall not exceed 60 % of the nominal total laden mass of the complete articulated vehicle.

NOTE There could be more prescriptive vehicle regulations.