

ICS 43.160
CCS T58

NB

**ENERGY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NB/T 47058-2017

Replacing JB/T 4783-2007

Road tankers for refrigerated liquefied gas

冷冻液化气体汽车罐车

Issued on: November 15, 2017

Implemented on: March 1, 2018

Issued by: National Energy Administration of the PRC

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Foreword

This document was issued on 15 November 2017 by the National Energy Administration of the PRC and takes effect on 1 March 2018.

It is a NB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 43.160, Chinese classification T58.

It replaces JB/T 4783-2007, which is superseded.

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 Directives for standardization - Part 1: Structure and drafting of standards.

This standard replaces JB/T 4783-2007 Cryogenic liquid road tankers. Compared with JB/T 4783-2007, the main technical changes are as follows.

- a) Title of the standard: changed from 'Cryogenic liquid road tankers' to 'Road tankers for refrigerated liquefied gas'.
- b) Scope: added the exclusions from the scope, the delimitation of the scope of the tanker and of the tank, and the definition of the main pressure-bearing components.
- c) Terms and definitions: deleted 19 terms and definitions such as cryogenic liquid and insulation layer; revised and added 11 terms and definitions such as high vacuum multilayer insulation and refrigerated liquefied gas.
- d) Qualification and responsibilities: the original 'Responsibilities' was changed to 'Qualification and responsibilities'; the responsibilities of the user or the party commissioning the design were added, and the requirements on the responsibilities of the design and manufacturing units were modified and improved.
- e) Materials: modified the requirements for steel plates, steel forgings, steel pipes and pipe fittings, welding materials, insulation materials, adsorbent materials and interlayer support materials of the tank; added requirements for sealing gasket materials.
- f) Design: modified the design requirements for the complete vehicle, loads, design temperature, design pressure, piping etc., and added requirements for the design-by-analysis method, minimum design metal temperature, minimum thickness of the tank, maximum permissible filling quantity etc.
- g) Safety accessories, instruments and loading/unloading accessories: explicitly listed the types of safety accessories, instruments and loading/unloading accessories, and modified the related technical requirements.
- h) Manufacture: modified the requirements for classification of welded joints, re-inspection of materials, cold and hot forming, assembly, welding and non-destructive testing, and added requirements for category E welded joints and coating of the tank.
- i) Test methods: added test methods such as the ammonia leak test, the halogen leak test and the helium leak test.
- j) Inspection rules: modified the requirements of the inspection rules and added a table of inspection items and technical requirements.
- k) Marking and identification: modified the specific requirements for marking and identification.
- l) Annexes: added the two annexes 'Declaration of conformity and revision of the standard' and 'Risk assessment report'; deleted the three original annexes 'Format and content of product nameplate', 'Format and content of product quality certificate' and 'Physical property parameters of common cryogenic liquids'.

The original Annex A 'Design calculation of safety relief devices' was changed to Annex C 'Calculation of safety relief rate of the tank and discharge capacity of overpressure relief

devices', and the content of the calculation of the safety relief rate of the tank and of the discharge capacity of overpressure relief devices was modified.

This standard was proposed by and is under the jurisdiction of the National Technical Committee on Boilers and Pressure Vessels of Standardization Administration of China (SAC/TC 262).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patents. The issuing body of this document shall not be held responsible for identifying any or all such patents.

The drafting of this standard was organized by the Subcommittee on Mobile Pressure Vessels of the National Technical Committee on Boilers and Pressure Vessels of Standardization Administration of China (SAC/TC 262/SC4).

Drafting organizations of this standard: Zhangjiagang CIMC Sanctum Cryogenic Equipment Co., Ltd., Shanghai Gas Industry Association, China Special Equipment Inspection and Research Institute, Shanghai Huayi Group Equipment Engineering Co., Ltd., Jiangsu Province Special Equipment Safety Supervision and Inspection Institute Zhangjiagang Branch, Chate Zhongqi Shenleng Tezhongche (Changzhou) Co., Ltd., Nantong CIMC Energy Equipment Co., Ltd., Zhangjiagang Hanzhong Shenleng Technology Co., Ltd., Jiangxi Zhiyangji Co., Ltd., Jingmen Hongtu Special Aircraft Manufacturing Co., Ltd., Shanghai Institute of Special Equipment Supervision and Inspection Technology, Aerosun Corporation, Changzhou Bolang Cryogenic Equipment Co., Ltd., Beijing Jianan Texiweiou Special Equipment Manufacturing Co., Ltd., Tieling Huanghai Special Vehicle Manufacturing Co., Ltd.

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The previous edition of the standard replaced by this standard is JB/T 4783-2007.

1 Scope

NB/T 47058-2017 governs road tankers for refrigerated liquefied gas, replacing JB/T 4783-2007. These are the truck-mounted and semi-trailer tanks that deliver liquid nitrogen, oxygen, argon, carbon dioxide and LNG by road: an inner vessel at cryogenic temperature inside an outer jacket, with the space between evacuated and filled with powder or multilayer insulation. The standard applies to inner vessels with a design pressure of at least 0.1 MPa and a volume of at least one cubic metre. It sets the scope, some seventy normative references and a full set of defined terms, then the qualification and responsibilities of the designer, manufacturer and inspection body. Materials are specified for the inner vessel, the outer jacket, the supports and the insulation, with the low-temperature toughness required and the tables of permitted grades and properties.

Design follows: the inner vessel for internal pressure and the loads of road transport, the outer jacket against external pressure from the vacuum, the supports that carry the inner vessel with minimum heat leak, the connection to the vehicle chassis, the insulation and vacuum system, and the sizing of piping, valves, pressure relief devices and level and pressure instruments. Fabrication and welding, non-destructive examination, pressure and leak tests, the vacuum and evaporation rate tests that prove the insulation, marking and the delivery documentation complete the standard.

1.1 This standard specifies the requirements for materials, design, manufacture, test methods, inspection rules, marking and identification, delivery documents, storage and transportation of road tankers for refrigerated liquefied gas (hereinafter referred to as tankers).

1.2 This standard is applicable to tankers whose tank inner vessel has a design pressure not less than 0.1 MPa and a geometric volume not less than 1 cubic metre, which adopt vacuum powder insulation or high vacuum multilayer insulation, and whose tank is permanently connected to a type-approved chassis or a semi-trailer running gear.

1.3 This standard is not applicable to the following tankers: a) tanks made of non-ferrous metals or non-metallic materials; b) tankers filled with refrigerated liquefied gas media whose normal boiling point is lower than minus 196 degrees Celsius; c) tankers filled with toxic media; d) national defence and military equipment and other tankers with special requirements.

1.4.1 The tanker to which this standard applies includes the tank, piping, safety accessories, instruments, loading/unloading accessories, and the type-approved chassis or semi-trailer running gear, supports, operating cabinet, self-pressurizer etc.

1.4.2 The scope of the tank is delimited as follows: a) the groove end face of the first circumferential joint where the tank is welded to the piping; b) the end face of the first threaded joint where the tank is connected by thread to piping or safety accessories, and the first flange sealing face for flanged connections; c) the covers of tank openings and their fasteners; d) the welds connecting the tank to non-pressure components.

1.4.3 The piping includes all pipes and pipe fittings connected to the tank.

1.4.4 The main pressure-bearing components include the shell and heads of the inner vessel, and the pipes, nozzles, flanges and flange covers with a nominal diameter not less than 15 mm in contact with the filled medium.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition (including all amendments) applies.