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GB/T 44851.12-2025

Road vehicles - Liquefied natural gas(LNG) fuel system components - Part 12: Rigid fuel line in copper and its alloys

道路车辆 液化天然气（LNG）燃气系统部件 第12部分：铜及其合金管

(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 12 of GB/T 44851 "Components of Liquefied Natural Gas (LNG) Fuel System for Road Vehicles". The following parts have been published.

--- Part 1: General requirements and definitions;

--- Part 2: Performance requirements and test methods;

--- Part 3: Check valve;

--- Part 4: Manual valves;

--- Part 5: Pressure gauges for gas cylinders;

--- Part 7: Safety valves;

--- Part 8: Overcurrent protection valve;

--- Part 10: Stainless steel pipes;

--- Part 11: Connectors;

--- Part 12: Copper and its alloy tubes;

--- Part 13: Throttle regulator;

--- Part 14: Differential pressure level gauge;

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--- Part 15: Capacitive level gauges;

--- Part 16: Carburettors;

--- Part 17: Natural gas leak detectors;

--- Part 18: Gas temperature sensors.

This document modifies ISO 12614-12:2021 "Road vehicles - Liquefied natural gas (LNG) fuel system components - Part 12. Copper and its alloy tubes".

This document has the following structural adjustments compared to ISO 12614-12:2021.

--- Adjust Chapter 4 of ISO 12614-12:2021 to Chapter 6 of this document, and Chapter 5 and Chapter 6 of ISO 12614-12:2021 Adjusted to Chapter 4 and Chapter 5 of this document;

--- Added 4.1, 4.2, 6.1 and 6.2 numbers.

The technical differences between this document and ISO 12614-12:2021 and their reasons are as follows.

--- Replaced ISO 12614-1 (see Chapter 3, 4.1) with the normative reference GB/T 44851.1 to comply with my country's technical requirements;

--- Replaced ISO 12614-2 (see 4.1, Table 1, 5.2) with the normative reference GB/T 44851.2 to comply with my country's technical requirements;

--- Changed the identification content (see Chapter 6).

The following editorial changes have been made to this document.

--- Deleted the unit bar (see Chapter 1 of ISO 12614-12:2021);

--- Changed the title of Chapter 4 (see Chapter 5 of ISO 12614-12:2021).

Introduction

After years of development, my country's gas vehicles have become mature, and a set of gas vehicle standards has been basically established.

Standards include ISO 12614, ISO 12617, ISO 19723, etc. GB/T 44851 "Liquefied Natural Gas (LNG) Fuel System for Road Vehicles" The Components is designed to align with the international standard system for liquefied natural gas (LNG) fuel gas system components for road vehicles, and promote the development of LNG fuel gas system components for road vehicles in my country.

The design, production and inspection standardization of natural gas (LNG) gas system components will play a leading and supporting role in gas vehicles. It consists of 16 parts.

--- Part 1: General requirements and definitions. The purpose is to specify the terminology

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definitions and technical requirements of system components.

--- Part 2: Performance requirements and test methods. The purpose is to specify the performance requirements of system components and describe the test methods.

--- Part 3: Check valve. The purpose is to specify the marking and requirements of check valves, describe the test methods and the hydrostatic strength, leakage, and connection Special test method for continuous operation.

--- Part 4: Manual valves. The purpose is to specify the identification and requirements of manual valves, describe the test methods and the hydrostatic strength, leakage, and connection Special test method for continuous operation.

--- Part 5: Pressure gauges for gas cylinders. The purpose is to specify the marking and requirements of pressure gauges for gas cylinders, describe the test methods and hydrostatic pressure Special test methods for strength, leakage and continuous operation.

--- Part 7: Safety valve. The purpose is to specify the terms, markings, requirements of safety valves, describe the test methods and hydrostatic pressure strength, discharge Special test methods for leakage, continuous running and operational testing.

--- Part 8: Overcurrent protection valve. The purpose is to specify the terminology, identification, requirements, description of test methods and hydrostatic pressure of overcurrent protection valves.

Special test methods for strength, leakage, resistance to overtorque, bending moment, operational tests and continuous operation.

--- Part 10: Stainless steel pipes. The purpose is to specify the marking and requirements of stainless steel pipes, describe the test methods and hydrostatic pressure Special test methods for strength and bending.

--- Part 11: Connectors. The purpose is to specify the identification and requirements of connectors, describe the test methods and hydrostatic strength, continuous operation Special test methods for movement, vibration resistance, and pull-off.

--- Part 12: Copper and its alloy tubes. The purpose is to specify the marking and requirements of copper and its alloy tubes, describe the test methods and hydrostatic pressure Special test methods for strength and bending.

--- Part 13: Throttle regulator. The purpose is to specify the marking and requirements of the throttle regulator, describe the test method and the hydrostatic pressure Special test methods for temperature, external leakage, and continuous operation.

--- Part 14: Differential pressure level gauge. The purpose is to specify the marking and requirements of differential pressure level gauges, describe the test methods and hydrostatic pressure Special test methods for strength, leakage and continuous operation.

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--- Part 15: Capacitive level gauges. The purpose is to specify the marking and requirements of capacitance level gauges, describe the test methods and insulation resistance. Special test method for resistance.

--- Part 16: Carburettors. The purpose is to specify the terminology, marking, requirements of carburettors, describe the test methods and hydrostatic strength, connection Special test methods for continuous operation, jacket icing, and compatibility of heat transfer fluids with non-metallic components.

--- Part 17: Natural gas leak detectors. The purpose is to specify the marking and requirements of natural gas leak detectors and describe the test methods And special test methods for insulation resistance and minimum working voltage.

--- Part 18: Gas temperature sensors. The purpose is to specify the identification and requirements of gas temperature sensors, describe the test methods and liquid Special test methods for static pressure strength, leakage, insulation resistance, and minimum working voltage.

1 Scope

This document specifies the technical requirements for copper and its alloy pipes used in liquefied natural gas (LNG) fuel systems for road vehicles and describes the test Test method.

This document applies to the vehicle types defined in GB/T 3730.1.

This document does not apply to the following.

a) gas cylinders;

b) stationary gas engines;

c) Container fixing parts;

d) electronic fuel control system;

e) Filling port.

Components not covered by this document shall be implemented as a reference and corresponding functional tests shall be performed.

Unless otherwise specified, pressures mentioned in this document are considered gauge pressures.

The working pressure of natural gas used as fuel in this document is 1.6 MPa. The pressure is adjusted by appropriate factors (ratios) to suit its For example, a system with an operating pressure of 2 MPa requires the pressure to be multiplied by 1.25.

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