मानकः पथप्रदर्शकः

COMPENDIUM OF INDIAN STANDARDS ON

GAS CYLINDERS

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PREFACE

In an era of rapid technological advancement and evolving industrial standards, the role of national standardization bodies has become increasingly crucial. The Bureau of Indian Standards (BIS), established under the BIS Act of 2016, stands at the forefront of this transformation in India. As the National Standards Body, BIS is tasked with the formulation, promotion, and implementation of National Standards, collectively known as Indian Standards. These standards, along with BIS's Conformity Assessment Schemes, form the cornerstone of a robust technical framework designed to foster a thriving National Quality Ecosystem. The BIS Standard Mark on products offers consumers vital third-party assurance of quality, safety, and reliability.

In this transformative period, the focus on rigorous quality control and product compliance is paramount. Mechanical Engineering, a field with a vast scope, plays a pivotal role in shaping the future of our nation.

Formulation of standards on gas cylinders for permanent, high pressure liquefiable low pressure liquefiable and dissolved gases; fittings of gas cylinder, namely valve fittings, pressure regulators; pipelines conveying gases; identification colours of gas cylinders; acetylene generators; filling ratios and developed pressures for different gases is done by the Gas Cylinders Sectional Committee, MED 16.

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1 GAS CYLINDERS

Gas cylinders are strong, high-pressure containers designed to store and transport a variety of gases in either compressed, liquefied, or dissolved forms. Made typically from durable materials like steel or aluminum, these cylinders come in different shapes and sizes depending on their intended use and the nature of the gas they contain—such as oxygen, nitrogen, acetylene, propane, or carbon dioxide. They are widely used across many sectors including industrial manufacturing, healthcare, scientific research, and even in households for cooking or heating. For example, in hospitals, oxygen cylinders are vital for patient care, while in construction, cylinders filled with acetylene and oxygen are used for welding and cutting metals. Each gas cylinder is clearly labeled with color codes and identification tags to indicate its contents and associated risks. Because of the potential dangers—such as leaks, fire hazards, or explosions—strict regulations govern their handling, transport, and storage. Proper training, regular maintenance, and the use of appropriate safety gear are essential to ensure safe operation.
Gas Cylinders can be further divided into types-

a) High Pressure Gas Cylinders
b) Low Pressure Gas Cylinders

1.1 High Pressure Gas Cylinders

As per Gas Cylinders Rules, 2016, the term "high pressure liquefiable gas" is defined as a liquefiable gas with a critical temperature between -10°C and +70°C.

The rules also define "compressed gas" as any permanent gas, liquefiable gas, or gas dissolved in liquid under pressure, which in a closed gas cylinder exerts a pressure exceeding 2.5 kgf/cm² absolute (1.5 kgf/cm² gauge) at 15°C or a pressure exceeding 3 kgf/cm² absolute (2 kgf/cm² gauge) at 50°C, or both, including cryogenic liquids.

High Pressure Gas Cylinders have been further sub-divided into three categories based on the type of Standard.

Fig. 1 High Pressure Gas Cylinder

1.1.1 *Design, Construction and Testing (Product Specification)*

Sl No.	IS No.	Title	Scope
1.	IS/ISO 11119-1 : 2020	Gas Cylinders - Design Construction And Testing Of Refillable Composite Gas Cylinders And Tubes Part 1 Hoop Wrapped Fibre Reinforced Composite Gas Cylinders And Tubes Up To 450 Litres	This document specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes, examination and testing at time of manufacture for: — type 2 composite hoop wrapped cylinders or tubes with a load-sharing metal liner and composite reinforcement on the cylindrical portion only; — water capacities up to 450 l; — the storage and conveyance of compressed or liquefied gases; — cylinders and tubes with composite reinforcement of carbon fibre, aramid fibre or glass fibre (or a mixture thereof) within a matrix or steel wire to provide circumferential reinforcement; — a minimum design life of 15 years.
2.	IS/ISO 11119-2 : 2020	Gas Cylinders- Design, Construction and Testing of Refillable Composite Gas Cylinders and Tubes Part 2 Fully Wrapped Fibre Reinforced Composite Gas Cylinders and Tubes up to 450 Litres	This document specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes, examination and testing at time of manufacture for: — type 3 fully wrapped cylinders or tubes with a load-sharing metal liner and composite reinforcement on both the cylindrical portion and the dome ends; — water capacities up to 450 l; — storage and conveyance of compressed or liquefied gases; — cylinders and tubes with composite reinforcement of carbon fibre, aramid fibre or glass

		with Load-Sharing Metal Liners	fibre (or a mixture thereof) within a matrix; — a minimum design life of 15 years.
3.	IS/ISO 11119-3 : 2020	Gas Cylinders-Design, Construction and Testing of Refillable Composite Gas Cylinders and Tubes Part 3 Fully Wrapped Fibre Reinforced Composite Gas Cylinders and Tubes up to 450 Litres with Non-load-sharing Metallic or Non-metallic Liners or without Liners	This document specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes, examination and testing at time of manufacture for: — type 4 composite fully wrapped cylinders or tubes with a non-load sharing liner and composite reinforcement on both the cylindrical portion and the dome ends; — type 5 fully wrapped cylinders or tubes without liners and with a test pressure of less than 60 bar and composite reinforcement on both the cylindrical portion and the dome ends; — water capacities up to 450 l; — for the storage and conveyance of compressed or liquefied gases; — cylinders and tubes with composite reinforcement of carbon fibre, aramid fibre or glass fibre (or a mixture thereof) within a matrix; — a minimum design life of 15 years.
4.	IS/ISO 11120 : 2015	Gas Cylinders Refillable Seamless Steel Tubes Of Water Capacity Between 150 L And 3 000 L Design Construction And Testing	This International Standard specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes, examinations and tests at manufacture of refillable quenched and tempered seamless steel tubes of water capacities exceeding 150 l up to and including 3 000 l for compressed and liquefied gases exposed to extreme world-wide ambient temperatures, normally between –50 °C and +65 °C.
5.	IS/ISO 11515 : 2022	Gas Cylinders Refillable Composite Reinforced Tubes Of Water Capacity Between 450 L And 3 000 L Design Construction And Testing	This document specifies the minimum requirements for the materials, design, construction and performance testing of — Type 2 hoop-wrapped composite tubes, — Type 3 fully-wrapped composite tubes, and — Type 4 fully-wrapped composite tubes with water capacities between 450 l and 3 000 l for storage and conveyance of compressed or liquefied gases with test pressures up to and including 1 600 bar1) and a design life of at least 15 years. This document is applicable to expected service temperatures between −40 °C and +65 °C.
6.	IS 15490 : 2017	Seamless steel cylinders for on - Board storage of compressed natural gas as a fuel for automotive vehicles - Specification (First Revision)	This standard deals with seamless steel cylinders of water capacity not exceeding 250 litre intended only for on-board storage of compressed natural gas as a fuel, intended to be permanently fixed to the automotive vehicle. This standard lays down the minimum requirements of the material, design, construction, marking and testing. Maximum working pressure of compressed natural gas (CNG) cylinder on-board

			should correspond to the maximum filling pressure at 15°C, that is 20 MPa (200 bar/204 kgf/cm2).
7.	IS 15637 : 2006	Welded stainless steel cylinders for liquefied petroleum gases (LPG) from 0.5 litre to 250 litre water capacity – Specification	This standard deals with stainless steel cylinders intended for storage and transportation of liquefied petroleum gases of nominal water capacity exceeding 0.5 litre up to and including 250 litre water capacity. This standard lays down requirement of materiials, design, manufacture, construction, tests and marking of these cylinders using stainless steel material for stationary/domestic use.
8.	IS 15660 : 2017	Refillable transportable seamless aluminium alloy gas cylinders - Specification (First Revision)	This standard lays down the minimum requirements for the material, design, construction and workmanship, manufacturing processes and tests of refillable seamless aluminium alloy gas cylinders of water capacities from 0.5 litre up to and including 150 litre for compressed, liquefied gases except liquefied petroleum gases (LPG)
9.	IS 15935 : 2021	Composite Cylinders for On-Board Storage of Compressed Natural Gas (CNG) as a Fuel for Automotive Vehicle - Specification (First Revision)	This standard specifies minimum requirements for serially produced light-weight, refillable gas cylinder intended for the on-board storage of high pressure compressed natural gas as a fuel for automotive vehicles to which the cylinders are to be fixed. The service conditions do not cover external loadings which may arise from vehicle collisions, etc. This standard covers metal and non-metal lined composite cylinders of the following types: a) Type 2 Metal lined hoop wrapped composite cylinders; b) Type 3 Metal lined full wrapped composite cylinders; and c) Type 4 Non-metal lined full wrapped composite cylinders.
10.	IS 16507 : 2017	Transportable gas cylinders cascade – Specification	This standard specifies the requirements for the design, manufacture, inspection and testing of a transportable refillable seamless steel cylinder cascade. It is applicable to cascades containing permanent compressed gases and mixtures there of excluding toxic gases and acetylene.
11.	IS 16646 : 2017	Transportable refillable fully wrapped composite cylinders for liquefied petroleum gas (LPG) – Specification	This standard deals with fully wrapped fiber reinforced composite cylinders with non-metallic non-load sharing liner (Type 4 cylinders) intended for storage and transportation of liquefied petroleum gases (see IS 4576) exposed to ambient temperature and with the test pressure of 30 bar of nominal capacity exceeding 0.5 litre up to and including 150 litre water capacity. This standard specifies the minimum requirements for the materials, design, manufacture, construction, inspection, testing and marking on these cylinders

12.	IS 16735 : 2018	Cylinders for on - Board Storage of Compressed Gaseous Hydrogen and Hydrogen Blends as a Fuel for Automative Vehicles – Specification	This standard specifies the requirements for refillable cylinders of water capacity not exceeding 500 litre intended only for the on-board storage of highpressure compressed gaseous hydrogen or hydrogen blends on automotive vehicles. This standard is applicable for cylinders of steel, aluminium or nonmetallic construction material, using any design or method of manufacture suitable for its specified service conditions.
13.	IS 16742 : 2018	Liquefied natural gas (LNG) - Tanks for on - Board storage as a fuel for automotive vehicles	This International Standard specifies the construction requirements for refillable fuel tanks for liquefied natural gas (LNG) used in vehicles as well as the testing methods required to ensure that a reasonable level of protection from loss of life and property resulting from fire and explosion is provided.
14.	IS 17613 : 2021	Gas Cylinders Refillable Welded Aluminium Alloy Cylinders Design Construction And Testing	This standard deals with welded aluminium alloy cylinders intended for storage and transportation of liquefied petroleum gases (see IS 4576) of nominal capacity exceeding 5 litre up to and including 150 litre water capacity. This standard lays down the minimum requirements for the materials, design, manufacture, construction, tests and marking of these cylinders
15.	IS 19060 (Part 1) : 2024	Cryogenic Vessels - Large Transportable Vacuum-Insulated Vessels Part 1 Design Fabrication Inspection And Testing (Modified Adoption Of ISO 20421-1)	This document specifies requirements for the design, fabrication, inspection and testing of large transportable vacuum-insulated cryogenic vessels of more than 450 l volume, which are permanently (fixed tanks) or not permanently (demountable tanks and portable tanks) attached to a means of transport, for one or more modes of transport.
16.	IS 4152 : 2011	Seamless carbon dioxide cylinders for firefighting purposes on board ship - Specification (Third Revision)	This standard deals with light-weight seamless carbon dioxide cylinders of water capacity 45 litres, 67.5 litres and 80 to 87 litres used in fire-fighting installations on boardships. It lays down the requirements for the material to be used in the manufacture of these cylinders, their construction, marking and testing. It also specifies the principal external dimensions of the cylinders.
17.	IS 7285 (Part 1) : 2018	Refillable seamless steel gas cylinders - Specification: Part 1 normalized steel cylinders (Fourth Revision)	This standard specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes and tests at manufacture of refillable normalized or normalized and tempered seamless steel gas cylinders of water capacities from 0.5 litre upto and including 400 litres for compressed, liquefied and dissolved gases. NOTES

			1 If so desired, cylinders of water capacity less than 0.5 litre may be manufactured and certified according to this standard. **2** If so desired, cylinders of water capacity greater than 400 litres may be manufactured and certified according to this standard. The number of cylinders to be subjected to pressure cycling test and sampling method for mechanical tests shall be decided in consultation with the statutory authority.
18.	IS 7285 (Part 2) : 2017	Refillable seamless steel gas cylinders - Specification: Part 2 quenched and tempered steel cylinders with tensile strength less than 1 100 MPa (112 Kgf/mm²) (Fourth Revision)	This standard specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes and tests at manufacture of refillable quenched and tempered seamless steel gas cylinders of water capacities from 0.5 litre up to and including 400 litres for compressed, liquefied and dissolved gases exposed to extreme ambient temperatures(normally between-20 and $+65^0$C). this part is applicable to cylinders with a maximum tensile strength(R_m) less than 1 100MPa(112 kgf/mm^2)
19.	IS 7312 : 2018	Welded and seamless steel dissolved acetylene gas cylinders - Specification (Third Revision)	This specification covers the requirements for portable welded or seamless dissolved acetylene gas cylinders made of steel and having nominal water capacity within the range 0.5 litters and up to and including 130 litres. This standard lays down the requirements for the materials, design, manufacture, construction, tests and marking of these cylinders.
20.	IS/ISO 9809-2 : 2019	Gas Cylinders Design Construction And Testing Of Refillable Seamless Steel Gas Cylinders And Tubes Part 2 Quenched And Tempered Steel Cylinders And Tubes With Tensile Strength Greater Than Or Equal To 1 100 MPa	This document specifies minimum requirements for the material, design, construction and workmanship, manufacturing processes, examination and testing at time of manufacture for refillable seamless steel gas cylinders and tubes with water capacities up to and including 450 l. it is applicable to cylinders and tubes for compressed, liquefied and dissolved gases and for quenched and tempered steel cylinders and tubes with an actual tensile strength *R*ma ≥ 1 100 MPa. It is not applicable to cylinders and tubes with *R*ma, max > 1 300 MPa for diameters >140 mm and guaranteed wall thicknesses $a' \geq 12$ mm and for cylinders and tubes with Rma, max > 1 400 MPa for diameters ≤140 mm and guaranteed wall thicknesses $a' \geq 6$ mm because, beyond these limits, additional requirements can apply.
21.	IS/ISO 13985 : 2006	Liquid hydrogen - Land vehicle fuel tanks	This International Standard specifies the construction requirements for refillable fuel tanks for liquid hydrogen

			used in land vehicles as well as the testing methods required to ensure that a reasonable level of protection from loss of life and property resulting from fire and explosion is provided. This International Standard is applicable to fuel tanks intended to be permanently attached to land vehicles.
22.	IS 18719 (Part 1): 2024/ ISO 21029-1: 2018	Cryogenic Vessels Transportable Vacuum Insulated Vessels of not More than 1 000 Litres Volume Part 1 Design, Fabrication, Inspection and Tests	This document specifies requirements for the design, fabrication, type test and initial inspection and test of transportable vacuum-insulated cryogenic pressure vessels of not more than 1 000 l volume

1.1.2 *Periodic Inspection and Testing (Code of Practice)*

Sl No.	IS No.	Title	Scope
1.	IS 15190 (Part 1) : 2002	Acetylene pipelines - Code of practice: Part 1 for pressures up to 155 kPa (G)	This code covers the design, fabrication, erection, testing and commissioning of acetylene gas pipelines having a maximum working pressure (PW) of 155 kPa (g) (1.5 kg/cn12 g) operating at a temperature up to 60°C.
2.	IS 15190 (Part 2) : 2002	Acetylene pipelines - Code of practice: Part 2 for pressures from 155 kPa (G) to 2550 kPa (G)	This Code (Part 2) applies to new plant and premises which may be engaged in production and compression and filling of acetylene in cylinders and premises where acetylene is discharged from dissolved acetylene cylinder banks through discharge manifolds
3.	IS 15975 : 2020	Gas Cylinders — Conditions for Filling Gas Cylinders (First Revision)	This standard specifies the general requirements such as charging pressure, filling ratios, minimum cylinder test pressure, etc. for filling single gas cylinders and manifolded cylinder bundles with single component gases. This standard also covers the recommended interval for periodical inspection of gas cylinder in use containing different gases conveyed in cylinders. This standard excluded the specific requirements for filling cryogenic gases and gas mixtures
4.	IS 16017 : 2024	Transportable Gas Cylinders Periodic Inspection and Testing of Seamless Aluminium Alloy Gas	This standard specifies the requirements for periodic inspection and testing of seamless aluminium alloy transportable gas cylinders (single or those from bundles) intended for compressed and liquefied gases under pressure, of water capacity from 0.5 litre up to 150 litres. This

		Cylinders (First Revision)	standard also specifies the requirements for periodic inspection and testing to verify the integrity of such gas cylinders to be reintroduced into service for a further stipulated time period as specified in gas cylinder rules. It also defines a procedure to qualify existing gas cylinders for free movement between India and other countries.
5.	IS 16050 : 2020	Gas Cylinders — Seamless, Welded and Composite Cylinders for Compressed and Liquefied Gases (Excluding Acetylene) — Inspection at Time of Filling (First Revision)	This International Standard specifies the inspection requirements at the time of filling, and applies to seamless or welded transportable gas cylinders made of steel or aluminium-alloy (Type 1), and for composite transportable gas cylinders (Types 2 to 5 inclusive) for liquefied or compressed gases of a water capacity up to 150 l. It may be applicable to cylinders and tubes with a water capacity between 150 l and 450 l, provided they are inspected and filled as individual cylinders and tubes.
6.	IS 16175 : 2014	Periodic inspection and requalification - Liquefied petroleum gas (LPG) cylinders for automotive use - Code of practice	This standard specifies the requirement for periodic inspection and testing of auto LPG containers to verify the integrity of such gas containers to be reintroduced into service for further period of time.
7.	IS 16185 : 2014	Periodic inspection and testing - Welded carbon steel gas cylinders - Code of practice	This standard specifies the requirements for periodic inspection and testing of refillable welded carbon steel gas cylinders intended for compressed, liquefied (excluding DA) under pressure, of water capacity from 5 litre up to and including 250 litre to verify the integrity for further service. It also applies, as far as practicable, to cylinders of less than 5 litre water capacity
8.	IS 16271 : 2014	Dissolved acetylene gas cylinders - Inspection at time of filling - Code of practice	This standard specifies minimum requirements for inspection at time of filling of single cylinders for the safe storage and transport of dissolved acetylene gas under pressure
9.	IS 16299 : 2014	Periodic inspection and requalification - High pressure steel cylinders for the on - Board storage of compressed natural gas as a fuel for automotive vehicles, cylinders for HCNG blends and CNG	This standard deals with seamless steel cylinders intended for on-board storage of compressed natural gas (CNG) as a fuel, intended to be permanently fixed to the automotive vehicle, cylinders for HCNG blends and CNG cascade cylinders.

		cascade cylinders - Code of practice	
10.	IS 6044 (Part 1) : 2018	Liquefied petroleum gas storage installations - Code of practice: Part 1 residential, commercial and industrial cylinder installations (Third Revision)	This standard (Part 1) lays down the requirements for the installations of liquefied petroleum gas (LPG) cylinders for vapour and/or liquid withdrawal from cylinders, the associated piping and equipment in residential, commercial and industrial premises, where cylinder manifold is provided for installation capacity up to 8 000 kg. The specific requirements for installation of liquid withdrawal from cylinders are covered in Annex A.
11.	IS 6044 (Part 2) : 2021	Liquefied Petroleum Gas Storage Installations Code Of Practice Part 2 Commercial Industrial And Domestic Bulk Storage Installations	This standard (Part 2) lays down the code of practice for LPG bulk storage installations where storage tanks over 1 000 litres water capacity are used at commercial, industrial and domestic consumer premises. This standard is not intended to cover LPG storage installations at: a) Refineries and cylinder/container filling plants; b) LPG-air distribution plants; c) Aerosol plants and; d) Auto LPG stations; and e) Any unit where LPG is not used as a fuel.
12.	IS 8198 : 2004	Steel cylinders for compressed gases (Atmospheric gases, hydrogen, high pressure liquefiable gases and dissolved acetylene gases) - Code of practice	The code(part X) covers filling, inspection testing, maintenance and use of portable steel cylinders for the storage and transportation of liquefied methyl bromide gas in cylinder, of nominal capacity up to and including 130liters water capacity.
13.	IS 8198 (Part 5) : 2022	Code Of Practice For Steel Cylinders For Compressed Gases Part 5: Liquefied Petroleum Gas LPG	This standard (Part 5) covers filling, inspection, testing and maintenance of portable steel cylinders for the storage and transportation of liquefied petroleum gas in cylinders exceeding 500 ml water capacity.
14.	IS 8198 (Part 6) : 1988	Code of practice for steel cylinders for compressed gases Part 6 Liquefied chlorine gas	This code (Part 6) covers filling, inspection, testing, maintenance and use of portable stee1 cylinders for storage and transportation of liquefied chlorine gas in cylinders.
15.	IS 8198 (Part 7) : 2024	Steel Cylinders for Compressed Gases - Code of Practice Part 7	The standard (Part 7) covers filling, inspection, testing, maintenance and use of portable steel cylinders for the storage and transportation of liquefied ammonia gas in

		Ammonia Gas (Second Revision)	cylinders, of nominal capacity up to and including 130 litres water capacity.
16.	IS 8198 (Part 8) : 2024	Steel Cylinders for Compressed Gases Code of Practice Part 8 Common Organic Refrigerant Gases (Second Revision)	This standard (Part 8) covers the physical properties, filling, periodic inspection and testing, handling and usage of common refrigerant gases in cylinders of nominal capacity up to and including 130 litres water capacity. Five refrigerant gases R12, R13, R22, R115 and R500 are covered.
17.	IS 8198 (Part 9) : 2024	Steel Cylinders for Compressed Gases Code of Practice Part 9 Sulphur Dioxide Gas (Second Revision)	This standard (Part 9) covers filling, inspection, testing, maintenance and use of portable steel cylinders for storage and transportation of liquefied sulphur dioxide gas in cylinders
18.	IS 8198 (Part 10) : 2024	Steel Cylinders for Compressed Gases Code of Practice Part 10 Methyl Bromide Gas (First Revision)	The standard (Part 10) covers filling, inspection, testing, maintenance and use of portable steel cylinders for the storage and transportation of liquefied methyl bromide gas in cylinders, of nominal capacity up to and including 130 litre water capacity.
19.	IS 8198 (Part 11) : 2024	Steel Cylinders for Compressed Gases Code of Practice Part 11 Methyl Chloride Gas (Second Revision)	The standard (Part 11) covers filling, inspection, testing, maintenance and use of portable steel cylinders for the storage and transportation of liquefied methyl bromide gas in cylinders.
20.	IS 8198 (Part 12) : 2024	Steel Cylinders for Compressed Gases - Code of Practice Part 12 Gases for Medical Use (First Revision)	This standard (Part 12) covers filling, inspection, testing, maintenance and use of portable steel cylinders for the storage and transportation of gases for medical use in cylinders exceeding 500 ml water capacity. The following gases have been covered: a) Carbon dioxide; b) Cyclopropane; c) Ethylene, helium; d) Nitrogen nitrous oxide; e) Oxygen; and f) Gas mixtures. Separate codes of practice for some of the gases used in medical cylinders have been already published. The following two codes are relevant: a) IS 8198; and b) IS 8198 (Part 8). The present code, therefore, covers only those aspects of medical cylinders which have not been touched in the above codes. Thus, inspection during manufacture, usage, periodic testing, disposal of condemned cylinders, filling, marking, labelling,

			bringing the cylinders in service, transportation and records have not been covered in this code.
21.	IS 8433 : 2017	Periodic inspection and maintenance of dissolved acetylene gas cylinders - Code of practice (Second Revision)	This code specifies the requirements for periodic inspection of acetylene cylinders.
22.	IS 8451 : 2018	Periodic inspection and testing of seamless steel gas cylinders - Code of practice (Third Revision)	This standard deals with seamless steel gas cylinder (single or those from bundles) intended for storage of compressed and liquefiable gases under pressure, of water capacity from 0.5 l up to and including 3 000 l. It also applies, as far as practicable, to cylinders of less than 0.5 l water capacity. This standard specifies the requirement for periodic inspection and testing to verify the integrity of such gas cylinders to be reintroduced into service for a further period of time. This standard does not apply for periodic inspection and testing of acetylene cylinders and composite cylinders. NOTES Composite cylinders are excluded because of totally different nature of construction which calls for different techniques during period testing. If required a separate standard may be prepared for composite cylinders periodic inspection and testing. The panel for this work may include the organizations who already have set up such facility
23.	IS 9200 : 2021	Methods Of Disposal Of Unserviceable Compressed Gas Cylinders Code Of Practice	This standard covers the methods of disposal of cylinders in use which have been found to be unsuitable for further use and have been recommended to be destroyed.

1.1.3 *Others*

Sl No.	IS No.	Title	Scope
1.	IS/ISO 11114-1 : 2020	Gas Cylinders — Compatibility of Cylinder and Valve Materials with Gas Contents Part 1 Metallic Materials (First Revision)	This document provides requirements for the selection of safe combinations of metallic cylinder and valve materials and cylinder gas content. The compatibility data given is related to single gases and to gas mixtures. Seamless metallic, welded metallic and composite gas cylinders and their valves, used to contain compressed, liquefied and dissolved gases are considered. NOTE In this document the term "cylinder" refers to transportable pressure receptacles, which also include tubes and pressure drums. Aspects such as the quality of delivered gas product are not considered.
2.	IS/ISO 11114-2 : 2021	Transportable Gas Cylinders - Compatibility of Cylinder and Valve Materials with Gas Contents Part 2 Non-Metallic Materials (First Revision)	This document gives guidance on the selection and evaluation of compatibility between non-metallic materials for gas cylinders and valves and the gas contents. It is also applicable to tubes, pressure drums and bundles of cylinders. This document covers composite and laminated materials used for gas cylinders. It does not include ceramics, glasses and adhesives. This document considers the influence of the gas in changing the material and mechanical properties (e.g. chemical reaction or change in physical state). The basic properties of the materials, such as mechanical properties required for design purposes (normally available from the materials supplier), are not considered. Other aspects, such as quality of delivered gas, are not considered. The compatibility data given are related to single component gases but can be applicable to gas mixtures. This document does not apply to cryogenic fluids (this is covered in ISO 21010).
3.	IS/ISO 11114-3 : 2010	Gas cylinders - Compatibility of cylinder and valve materials with gas contents: Part 3 autogenous ignition test for non - Metallic	This part of ISO 11114 specifies a test method to determine the autogenous ignition temperature of non metallic materials in pressurized gaseous oxygen. The autogenous ignition temperature is one criterion for ranking materials, and can be used to assist with the choice of materials used in the presence of gaseous oxygen. A comprehensive bibliography of the published material on which this part of ISO 11114 is based is included.

		materials in oxygen atmosphere	It is intended that this part of ISO 11114 be used for the selection of non-metallic materials for gas cylinders and accessories, for example to select the materials in order to meet the requirement for type testing for oxygen compatibility of all cylinder valves for highly oxidizing gases as specified in ISO 10297.
4.	IS/ISO 11114-4 : 2017	Transportable Gas Cylinders — Compatibility of Cylinder and Valve Materials with Gas Contents Part 4 Test Methods for Selecting Steels Resistant to Hydrogen Embrittlement (First Revision)	This document specifies test methods and the evaluation of results from these tests in order to qualify steels suitable for use in the manufacture of gas cylinders (up to 3 000 l) for hydrogen and hydrogen bearing embrittling gases. This document only applies to seamless steel gas cylinders. The requirements of this document are not applicable if at least one of the following conditions for the intended gas service is fulfilled: — the working pressure of the filled embrittling gas is less than 20 % of the test pressure of the cylinder; — the partial pressure of the filled embrittling gas of a gas mixture is less than 5 MPa (50 bar) in the case of hydrogen and other embrittling gases, with the exception of hydrogen sulphide and methyl mercaptan; in such cases, the partial pressure shall not exceed 0,25 MPa (2,5 bar). NOTE In such cases, it is possible to design the cylinder as for ordinary (non-embrittling) gases.
5.	IS 3710 : 1978	Filling ratios for low pressure liquefiable gases contained in cylinders (First Revision)	This standard specifies the filling ratios to be used when low pressure liquefiable gases are filled into transportable gas cylinders.
6.	IS 3933 : 2021	Colour Identification of Gas Cylinders and Related Equipment Intended for Medical Use (First Revision)	This standard applies to the identification of the contents of the gas cylinders intended for medical use.
7.	IS 4379 : 2021	Identification of the Contents of Industrial Gas Cylinders (Second Revision)	This standard covers the method of marking and colouring industrial gas cylinders both for steel and aluminium cylinder. It does not cover colour coding for medical cylinders.
8.	IS 5844 : 2014	Hydrostatic stretch testing of compressed gas cylinders -	This standard describes procedures for the hydrostatic stretch testing of cylinders intended for the storage and

		Recommendations (First Revision)	transport of compressed gases. Two methods, namely, water jacket method and non-jacket method, have been covered.
9.	IS 7241 : 2024	Gas Cylinder Technology- Glossary of Terms (Second Revision)	This standard covers a glossary of general terms used in gas cylinder technology. Specific terms used for a typical gas or cylinder (for example, those used in acetylene cylinders) have not been included.
10.	IS 18719 (Part 2) : 2024	Cryogenic Vessels - Transportable Vacuum Insulated Vessels of not more than 1 000 Litres Part 2 Operational Requirements	This Indian Standard specifies operational requirements for transportable vacuum insulated cryogenic vessels of not more than 1 000 litres volume designed to operate above atmospheric pressure. It also includes putting into service, filling, withdrawal, transport within the location, storage, maintenance, periodic inspection, and emergency procedures in the respect to these vessels.
11.	IS 8775 : 1978	Filling pressure and corresponding developed pressure for permanent gases contained in cylinders	This standard specifies the values of internal pressure developed at a temperature of 65^0C by different permanent gases when contained in cylinders, corresponding to their filling pressure at 15^0C

1.2 Low Pressure Gas Cylinders

Low Pressure Gas Cylinders in India are governed by the Gas Cylinders Rules, 2016, issued under the Explosives Act, 1884. As per these rules, low pressure gas cylinders are defined as cylinders intended for gases stored at pressures not exceeding 1.5 MPa (15 bar) at 15°C, typically used for storing gases like liquefied petroleum gas (LPG), anhydrous ammonia, or other non-corrosive and non-toxic gases.

Low Pressure Gas Cylinders have been further sub-divided into three categories based on the type of Standard.

Fig 2 Low Pressure Gas Cylinder

1.2.1 *Design, Construction and Testing (Product Specification)*

Sl No.	IS No.	Title	Scope
1.	IS 12586 : 2021	Brazed low carbon steel gas cylinders not exceeding 13 litre water capacity Specification	This standard deals with brazed low carbon steel cylinders intended for storage and transportation of low pressure liquefiable gases, other than toxic gases, of nominal capacity exceeding 500 ml but not exceeding 13 litres of water capacity. This standard lays down the minimum requirements for the materials, design, fabrication, construction, testing and marking on these cylinders
2.	IS 14899 : 2014	Liquefied petroleum gas (LPG) containers for automotive use - Specification (First Revision)	This standard specifies the requirements of design, construction and testing of all welded steel containers for automotive liquefied petroleum gas (LPG) (see IS 14861) for vehicle propulsion, to be fixed permanently on the vehicle and fitted in that position.

3.	IS 3196 (Part 1) : 2013	Welded low carbon steel cylinders exceeding 5 litres water capacity for low pressure liquefiable gases: Part 1 cylinders for liquefied petroleum gases (LPG) - Specification (Sixth Revision)	This standard (Part 1) deals with welded low carbon steel cylinders intended for storage and transportation of liquefied petroleum gases (see 1S 4576) of nominal capacity exceeding 5 l up to and including 250 l water capacity. This standard lays down the minimum requirements for the materials, design, manufacture, construction, tests and marking on these cylinders.
4.	IS 3196 (Part 2) : 2006	Welded low carbon steel cylinders exceeding 5 litre water capacity for low pressure liquefiable gases: Part 2 cylinders for liquefiable non - Toxic gases other than lpg - Specification (First Revision)	This standard (Part 2) deals with welded "low carbon steel cylinders intended for storage and transportation of low pressure liquefiable gases other than LPG of nominal capacity exceeding 5 Iitre up to and including 250 Iitre water capacity. This standard lays down the minimum requirements for the materials, design, manufacture, construction, tests and marking of these cylinders
5.	IS 3196 (Part 4) : 2001	Welded low carbon steel cylinders exceeding 5 litre water capacity for low pressure liquefiable gases - Specification: Part 4 cylinders for toxic and corrosive gases	This standard deals with welded low carbon steel cylinders intended for storage and transportation of toxic and/or corrosive low pressure liquefiable gases of nominal capacity up to and including 250 litres water capacity. This standard lays down the requirements for the design, materials to be used, manufacture, construction, tests and marking of these cylinders.
6.	IS 7142 : 2025	Welded low carbon steel cylinders for low pressure liquifiable gases not exceeding 5 litre water capacity - Specification (Second Revision)	This standard deals with welded low carbon steel two piece cylinders intended for storage and transportation of low pressure liquefiable gases, other than toxic gases, of nominal capacity exceeding 500 ml, but not exceeding 5 litre water capacity. This standard lays down the requirements for the materials, design, manufacture, construction, tests and marking of these cylinders. Cylinders with water capacity more than 5 litres are covered in IS 3196 (Part 1 and Part 2).

1.2.2 *Periodic Inspection and Testing (Code of Practice)*

Sl No.	IS No.	Title	Scope
1.	IS 12936 : 2017	Basic requirements for delivery persons engaged in the delivery of LPG cylinders - Code of practice (First Revision)	This code lists the responsibility of delivery persons after the receipt of filled cylinders at the godown, checking of net weight of the contents, transportation to customer's premises, disconnecting of the old consumed cylinder and replacing it with a filled cylinder, proper fitment of regulator, checking for proper flame of burner, testing for leak and/or other difficulties and bringing back the empty cylinders to godown.
2.	IS 13258 : 2014	Welded low carbon steel cylinders exceeding 5 litre water capacity for low pressure liquefiable gas - Requirements for inspection and reconditioning of used lpg cylinders (First Revision)	This standard lays down the requirements for the inspection, materials, procedure, testing and marking for reconditioning of used LPG cylinders manufactured as per IS 3196 (Part 1) : 2006 'Welded low carbon steel cylinders exceeding 5 litre water capacity for low pressure liquefiable gases : Part 1 Cylinders for liquefied petroleum gases (LPG) — Specification (fifth revision)' of capacity exceeding 5 litre and up to and including 250 litre.
3.	IS 16054 : 2013	Periodic inspection and testing - Welded low carbon steel cylinders exceeding 5 - Litre water capacity for liquified petroleum gas (LPG) - Code of practice	This standard specifies the inspection and testing procedure for the periodic inspection of transportable refillable welded cylinders for LPG, of water capacity exceeding 5 litres up to and including 250 litres, as per periodicity defined under Gas Cylinders Rules, 2004.
4.	IS 3196 (Part 3) : 2012	Welded low carbon steel cylinder exceeding 5 litre water capacity for low pressure liquefiable gases: Part 3 methods of test (First Revision)	This standard lays down methods of test for welded low carbon steel cylinders intended for storage and transportation of low pressure liquefiable gases, of nominal water capacity exceeding 5 litre and up to and including 250 litre nominal water capacity. This standard also lays down various tests carried out in the plant and laboratory and details of carrying out these tests.
5.	IS 5845 : 2024	Inspection of Low Pressure Welded Steel Gas Cylinders Other than LPG Cylinders in Use-Code of Practice (Third Revision)	This Indian Standard (Third Revision) covers the measurement of various external and internal defects by inspection and the limiting criteria for the acceptance of low pressure welded steel gas other than LPG cylinders in use on the basis of extent of defects revealed by inspection
6.	IS 5845 : 1993	Code of practice for inspection of low	This Indian Standard (Third Revision) covers the measurement of various external and internal defects by

		pressure welded steel gas cylinders other than LPG cylinders in use (Second Revision)	inspection and the limiting criteria for the acceptance of low pressure welded steel gas other than LPG cylinders in use on the basis of extent of defects revealed by inspection. The limiting criteria for high pressure acetylene gas cylinders and LPG cylinders in use are covered by the following Indian Standards: IS No. Title IS 8433 : 2017 Periodic inspection and maintenance of dissolved acetylene gas cylinders — Code of practice (second revision) IS 8451 : 2018 Periodic inspection and testing of seamless steel gas cylinders — Code of practice (third revision) IS 13258 : 2014 Welded low carbon steel gas cylinders exceeding 5 litre water capacity for low pressure liquefiable gas — Requirements for inspection and reconditioning of used LPG cylinders (first revision)
7.	IS 9639 : 2017	Visual inspection of low pressure welded steel gas cylinders during manufacture - Code of practice (First Revision)	This standard covers the measurement of various external and internal defects by visual inspection and the limiting criteria for the acceptance of newly manufactured cylinders for use with filling of low pressure gases, on the basis of extent of defects revealed by visual inspection.

1.2.3 *Other*

Sl No.	IS No.	Title	Scope
1.	IS 15966 : 2013	Refillable welded steel cylinder for liquefied petroleum gas (LPG) - Procedure for checking before, during and after filling	This standard specifies the procedures to be adopted when checking transportable refillable welded steel LPG cylinders before, during and after filling.

2 VALVES FOR GAS CYLINDERS

Valves for gas cylinders are essential components that control the release and regulation of gas from the cylinder. They are designed to ensure safe storage, transportation, and usage of various gases, including industrial, medical, and domestic types. These valves are equipped with safety features such as pressure relief devices, non-return mechanisms, and leak-proof seals to prevent accidental gas leakage or backflow. Depending on the type of gas, different valve designs are used to match safety requirements and compatibility. Proper handling, regular inspection, and use of approved valves are crucial to ensure user safety and prevent hazardous situations.

Similar to Gas Cylinders, Valves can also be divided into two categories-

1. Valves for High Pressure Gas Cylinders
2. Valves for Low Pressure Gas Cylinders

2.1 Valves for High Pressure Gas Cylinders

Valves for high pressure gas cylinders are specially designed to withstand and regulate gases stored at pressures typically above 150 bar. These valves are used for gases such as oxygen, nitrogen, hydrogen, and carbon dioxide in industrial, medical, and laboratory applications. To ensure safety, they are equipped with robust features like pressure relief devices, tamper-proof designs, and non-return valves that prevent backflow and uncontrolled gas release. Made from high-strength materials, these valves are tested for durability and leak resistance. Regular maintenance and adherence to safety standards are essential to ensure reliable performance and prevent accidents.

Valves for high Pressure Gas Cylinders have been further sub-divided into three categories based on the type of Standard.

Fig 3. High Pressure Gas Cylinder Valve

2.1.1 *Design, Construction and Testing (Product Specification)*

Sl No.	IS No.	Title	Scope
1.	IS 11006 : 2011	Flash back arrestor (Flame arrestor) –	This standard covers flash back arrestors for use in delivery pipe lines, acetylene generators, gas, petroleum,

		Specification (First revision)	oil and gasoline or liquefied petroleum storage and or piping system and welding and cutting systems.
2.	IS 12300 : 2024	Gas Cylinder Valves for Small Refrigerant Cylinders -Specification (First Revision)	This standard covers basic dimensions and construction requirements of gas cylinder valve for small refrigerant (hydrocarbon/halocarbon) cylinders up to 25 litre water capacity.
3.	IS 15100 : 2018	Multi - Function valve assembly for permanently fixed liquefied petroleum gas (LPG) containers for automotive use - Specification (First Revision)	This standard specifies materials, design, construction and testing requirements for multifunction valve assembly for permanently fixed type of liquefied petroleum gas (LPG) containers for automotive use. This standard covers multi-function valves of both liquid and vapour withdrawal type
4.	IS 16484 : 2017	Liquid off - Take valve fitting to gas cylinders or tanks (Mobile Or Static) for liquid petroleum gas (LPG) – Specification	This standard covers the specification of material, design and testing of liquid off take valve fitting to gas cylinder or tanks (mobile or static) of more than 75 litre water capacity for LPG and covers valve with taper stem.
5.	IS 16485 : 2020	Flame Arresters — Performance Requirements, Test Methods and Limits for Use (First Revision)	This International Standard specifies the requirements for flame arresters that prevent flame transmission when explosive gas-air or vapour-air mixtures are present. It establishes uniform principles for the classification, basic construction and information for use, including the marking of flame arresters, and specifies test methods to verify the safety requirements and determine safe limits of use. This International Standard is valid for pressures ranging from 80 kPa to 160 kPa and temperatures ranging from −20 °C to + 150 °C.
6.	IS 16988 : 2018	Compressed natural gas cylinder valve integrated with solenoid operation (Remotely Controlled) for automotive use – Specification	This standard covers the requirements for design, materials, manufacture and testing of compressed natural gas cylinder valve integrated with solenoid operation (remotely controlled) for automotive use.
7.	IS 18272 : 2023	Residual pressure valves and type testing of cylinder valves incorporating residual pressure devices Specification	This standard specifies design, type testing and marking requirements for cylinder valves incorporating residual pressure devices, hereinafter referred to as residual pressure valves (RPVs). The requirements mentioned in this standard are in addition to those given in IS 3224.

8.	IS 18608 : 2024	Cryogenic Vessels- Valves For Cryogenic Vessels	This standard specifies the requirements for the design manufacture and testing of valves for a rated temperature of - 50 °C and not below - 196 °C for use with cryogenic vessel up to 1000 litres water capacity.
9.	IS 3224 : 2021	Valve for compressed gas cylinders excluding liquefied petroleum gas (LPG) cylinders - Specification (fourth revision)	This standard covers the requirements for design, materials, manufacture and testing of new valve fittings for use with refillable aluminum and steel cylinders for compressed gases (permanent and high and low pressure liquefiable and dissolved gases) other than liquefied petroleum gas (LPG) up to 1 000 litre water capacity. The standard also covers valve fittings for use in firefighting and for compressed natural gas cylinders for automotive use.
10.	IS 5903 : 2014	Recommendation for safety devices for gas cylinders (First Revision)	This standard covers requirements for the design, construction, testing and certification of safety devices for gas cylinders.
11.	IS 7302 : 2018	Valve fittings for self-contained breathing apparatus (SCBA) and self-contained underwater breathing apparatus (SCUBA) - Specification (First Revision)	This standard covers the requirements for design, materials, manufacture and testing of new valve fittings for use with refillable high pressure cylinders for breathing apparatus, namely Self Contained Breathing Apparatus (SCBA) and Self Contained Underwater Breathing Apparatus (SCUBA). The valves are used for breathable air, oxygen and oxygen/nitrogen mixture. Valves with both taper threads and parallel threads are covered.This standard is not applicable to valves for industrial and medical gases, as they are separately covered in IS 3224 'Valve fittings for compressed gas cylinders excluding liquefied petroleum gas (LPG) cylinders – Specification' and valves for small refrigerants are covered in IS 12300 : 1988 'Valve fittings for refrigerant cylinders — Specification'

2.1.2 *Others*

Sl No.	IS No.	Title	Scope
1.	IS 15894 : 2018	Inspection gauges for checking taper threads of gas cylinder valves and cylinder necks - Taper 1 in 16 on diameter - Specification (First Revision)	This standard prescribes dimensions, tolerances and material requirement of inspection gauges recommended for checking the taper threads on valve stems and the taper threads on cylinder necks for compressed gas cylinders having a taper of 1in 16 on diameter and as given in IS 3224 and IS 8737.

2.	IS 3745 : 2024	Yoke Type Medical Cylinder Valve with Pin Index Connection (Third Revision)	This standard covers basic dimensions and constructional requirements for yoke type valve connections for medical gas cylinders with a maximum working pressure (filling pressure at 15 oC) of 200 bar. It also specifies the dimensions and positions for the holes and pins for the outlet connections for medical gases and gas mixtures

2.2 Valves for Low Pressure Gas Cylinders

Valves for low pressure gas cylinders are essential components designed to regulate, control, and ensure safe dispensing of gases stored at low pressures. These valves are engineered for reliability, leak prevention, and easy operation, commonly used in applications involving LPG, propane, butane, and other industrial or domestic gases. Constructed from high-grade materials, they meet international safety standards and are available in various configurations to suit cylinder type, gas compatibility, and usage conditions.

Fig 4 Low Pressure Gas Cylinder Valve

2.2.1 *Design, Construction and Testing (Product Specification)*

Sl No.	IS No.	Title	Scope
1.	IS 8737 : 2017	Valve Fittings for Use with Liquefied Petroleum Gas	This standard specifies the basic requirements of

		(LPG) of up to 250 litre Water Capacity Specification (Second Revision)	material, dimensions and testing of valve fittings for liquefied petroleum gas (LPG) gas cylinders of more than 5 litre water capacity. It covers valves with taper stems only. Valve fittings for LPG cylinders of water capacity up to 5 litre are covered in a separate standard IS 8776 'Valve fittings for use with LPG cylinder up to and including 5 litre water capacity'.
2.	IS 8776 : 2024	Valve Fittings for Use With Liquefied Petroleum Gas (LPG) Cylinders up to and Including 13 Litre Water Capacity - Specification (Second Revision)	This standard specifies the basic requirements of material, dimensions and testing of valve fittings for liquefied petroleum gas (LPG) gas cylinders up to and including 13 litre water capacity. The standard covers the following types of valves: a) Valves with parallel inlet threads, Type A; and b) Valves with their bodies directly welded to the cylinder, Type B;

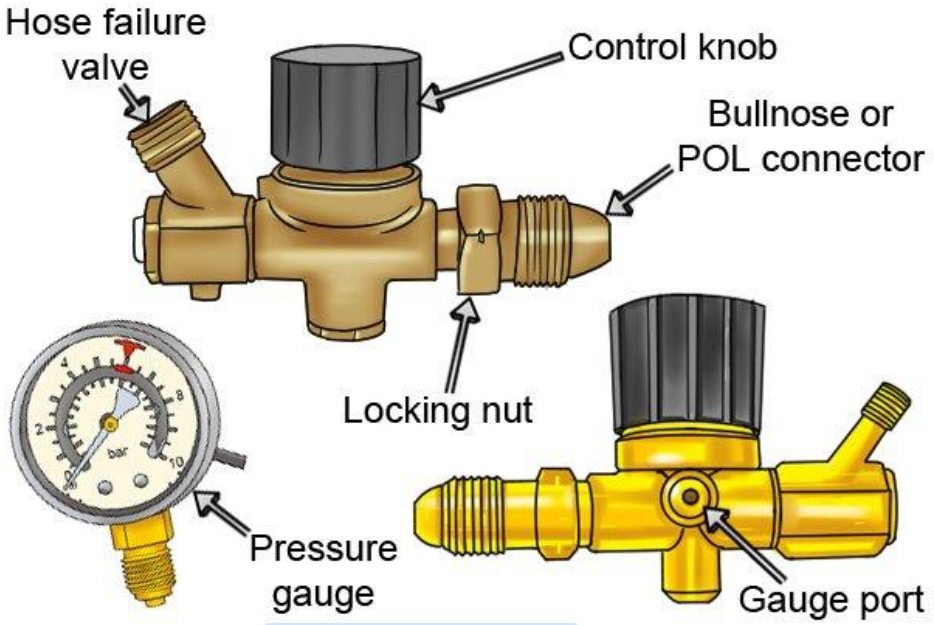
2.2.2 *Others*

Sl No.	IS No.	Title	Scope
1.	IS 9122 : 2023	Inspection Gauges for Checking Type 2 Taper Thread of Gas Cylinder Valves, Taper 3 in 25 — Specification (Second Revision)	This standard prescribes dimensions, tolerances and material requirements of inspection gauges recommended for checking the taper thread on the valve stems and the threads in the cylinder necks of valve fitting conforming to Type 2 of IS 3224 and Type 2 of IS 8737. These threads are denoted as 17E and 25E. This standard also mentions the thread details of these 17E and 25E valve stems and cylinder necks.

3 OTHER COMPONENTS USED WITH GAS CYLINDERS

Gas cylinders are supported by various essential components to ensure safe storage, control, and usage of gases. Key components include:

- **Valves** – Regulate the flow of gas in and out of the cylinder.
- **Pressure Regulators** – Control and maintain the desired outlet pressure.
- **Valve Guards/Caps** – Protect valves from damage during handling or transport.
- **Hoses & Connectors** – Facilitate safe gas transfer from the cylinder to the equipment.
- **Gauges** – Measure internal pressure for monitoring and safety.



Other components used with Gas Cylinders can also be subdivided into two categories-

1. Components used with High Pressure Gas Cylinders
2. Components used with Low Pressure Gas Cylinders

3.1.1 *Components used with High Pressure Gas Cylinders*

Sl No.	IS No.	Title	Scope
1.	IS 16280 : 2021	High Pressure Regulators and Adaptors for Use with Liquefied Petroleum Gases (LPG) — Specification (First Revision)	This standard specifies materials, construction, performance, safety and testing requirements for the following high pressure devices for use with liquefied petroleum gases (butane, propane and their mixtures) in vapour phase:
2.	IS 7202 : 2017	Inspection gauges for checking type 4 (Size 1, 2, 3) taper threads of gas cylinder valves and cylinder necks - Specification (First Revision)	This standard specifies the dimensions, tolerances and material requirement of inspection gauges recommended for checking the taper threads on valve stems and the taper threads on cylinder necks for compressed gas cylinders threads conforming to "Type IV (Sizes 1, 2 and 3) taper 1:8 on diameter" of IS 3224.
3.	SP 9 : 1973	Technical data sheet for gases conveyed in cylinders	This data sheet gives the technical data for 101 gases (list given in Appendix A) conveyed in cylinders. It lists chemical formula, physical state, toxicity values, flammability ranges, degree of corrosiveness, critical temperatures, boiling point, vapour pressure, etc, of gases. In addition to this, the sheet also gives the following technical data for ga s

			cylinder s used for conveying the gases: Service pressures, test pressures, filling pressures, filling ratio, type of valve outlets, list of prohibited materials, use of safety devices, and other specific characteristics, if any.

3.1.2 *Components used with Low Pressure Gas Cylinders*

Sl No.	IS No.	Title	Scope
1.	IS 8471 : 2003	Acetylene generators - Requirements (First Revision)	This standard covers the requirement of design, construction, performance and testing of portable and stationary, automatic and non-automatic, low pressure and medium pressure acetylene generators of water to carbide type or carbide to water type to be employed for generation of acetylene for use in oxy-acetylene welding and cutting systems or cylinder filling and/or any other chemical process. For portable generators maximum gas generation capacity shall be limited to 3.2 m3/h, and shall-have a total calcium carbide holding capacity of less than 20 kg. Stationary generators are divided into two categories: a) Small: having a maximum production capacity of 5 m^3lh of gas, and b) Large: having production capacity more than 5 m^3lh of acetylene gas.
2.	IS 8452 : 1977	Glossary of terms used in acetylene generators	This standard covers a glossary of general terms used in the field of acetylene generators.
3.	IS 9798 : 2013	Low pressure regulators for use with liquefied petroleum gas (LPG) - Specification (Second Revision)	This standard specifies materials, construction, performance and testing requirements for low pressure single or two stage regulators for use with liquefied petroleum gas mixtures in vapour phase up to 4.903 kN/m2 [50gf/ cm2 or 500 mm water column (WC)] outlet pressure. NOTE — Low pressure is considered to be any pressure below 6.894 kN/m2 (70.3gf/cm2). Domestic and commercial appliances normally operate at gas pressure of 2.942 kN/m2 (30 gf/cm2 or 300 mm water column).