AMENDMENT NO. 3 JULY 2024

TO

IS 16018 : 2012 WHEELED FIRE EXTINGUISHERS — PERFORMANCE AND CONSTRUCTION — SPECIFICATION

[*Page* 1, *clause* **2** (*see also Amendment No.* 2)] — Delete the following:

'*IS No.*	*Title*
3400 (Part 1) : 1987	Methods of test for vulcanized rubber: Part 1 Tensile stress-strain properties (*second revision*)
4308 : 2003	Dry chemical powder for fighting B and C class fires — Specification (*second revision*)
4861 : 1984	Specification for dry powder for fighting fires in burning metals (*first revision*)
4947 : 2006	Gas cartridges for use in fire extinguishers — Specification (*third revision*)
4989 (Part 4) : 2003	Specification for multipurpose aqueous film forming foam liquid concentrate for extinguishing hydrocarbon and polar solvent fires
4989 : 2006	Foam concentrate for producing mechanical foam for fire fighting — Specification (*third revision*)
7285 : 1988	Specification for seamless steel cylinders for permanent and high pressure liquefiable gases
14609 : 1999	Dry chemical powder for fighting ABC class fires — Specification
15493 : 2004	Gaseous fire extinguishing systems — General requirements
15660 : 2006	Refillable transportable seamless aluminium alloy gas cylinders — Specification
15683 : 2006	Portable fire extinguishers — Performance and construction — Specification'.

(*Page* 1, *clause* **2**) — Insert the following in ascending order of IS numbers:

IS No.	*Title*
IS 3400 (Part 1) : 2021	Methods of test for vulcanized rubber: Part 1 Tensile stress-strain properties (*fourth revision*)
IS 4308 : 2019	Dry chemical powder for fighting B and C class fires — Specification (*third revision*)
IS 4989 : 2018	Foam concentrate for producing mechanical foam for fire fighting — Specification (*fourth revision*)
IS 7285	Refillable seamless steel gas cylinders — Specification:
(Part 1) : 2018	Normalized steel cylinders (*fourth revision*)
(Part 2) : 2017	Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa (112 kgf/mm^2) (*fourth revision*)
IS 15493 : 2021	Gaseous fire extinguishing systems — General requirements (*first revision*)

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IS No.	*Title*
IS 15660 : 2017	Refillable transportable seamless aluminium alloy gas cylinders — Specification (*first revision*)
IS 15683 : 2018	Portable fire extinguishers — Performance and construction — Specification (*first revision*)
IS 17917 : 2022	Pressure sensitive adhesive films for general industrial applications — Specification

[*Page* 3, *clause* **5.2** (*see also Amendment No.* 2)] — Substitute the following for the existing:

'**5.2 Propellants**

The propellants for stored pressure and cartridge-operated extinguishers shall be air, carbon dioxide, or nitrogen.'

(*Page* 3, *clause* **5.5.2**) — Insert the following clause at the end:

'**5.5.3** *Requirements for Extinguishants* (*Charges*) *Filled in the Extinguisher*

5.5.3.1 For ABC powder type extinguisher, the content of monoammonium phosphate shall not be less than 40 percent when tested as per method given in IS 4308.

5.5.3.2 For BC powder type extinguisher, the content of sodium bicarbonate/potassium bicarbonate shall not be less than 75 percent when tested as per method given in IS 4308.

5.5.3.3 For foam type extinguisher, the surface tension shall not be more than 18 dyne/cm when tested as per the method given in IS 4989.'

[*Page* 7, *clause* **8.1.6** (*see also Amendment No.* 2)] — Substitute the following for the existing:

'**8.1.7** A suitable drain plug shall be provided in water and foam based wheeled fire extinguishers and for other wheeled fire extinguishers it is optional to provide.'

(*Page* 7, *clause* **8.2**) — Substitute the following for the existing:

'8.2 High Pressure Cylinders

Wheeled fire extinguishers or propellant gas cartridges and cylinders having a service pressure (P_s) greater than 2.5 MPa shall be fitted with cylinders and valves which are designed, tested, and marked in accordance with national regulations.'

(*Page* 7, *clause* **8.4.3**) — Substitute 'IS 7285 (Part 1 and Part 2)' *for* 'IS 7285'.

(*Page* 8, *clause* **8.10**) — Substitute the following for the existing:

'**8.10 Requirements for Plastics Components**

Plastics components used in wheeled fire extinguishers shall comply with the requirements given in **8.10.1** to **8.10.3**.

NOTE — Alternatively, for plastic components, test certificate of manufacturer of plastic components or BIS licensees or any other recognized test laboratory shall be acceptable, and no test is required for acceptance criteria except the test for exposure to extinguishing medium (*see* **8.10.3**).

8.10.1 *Air-Oven Ageing*

8.10.1.1 Subject at least two components to accelerated ageing in an oven at 100 °C for 10 days.

8.10.1.2 Following the exposure, condition the components for 5 h at 27 °C ± 5 °C and subsequently inspect them for cracking or brittleness. No cracking or brittleness shall be permitted.

8.10.2 *Impact Resistance Test for Plastic Make Valve*

8.10.2.1 Mount at least four samples subjected to the ageing test (*see* **8.10.1**) (two with and two without the safety locking device engaged) and pressurize the extinguisher cylinder to the maximum service pressure (P_{ms}) with nitrogen after being filled 95 percent with a water and anti-freeze solution. Test the samples at 27 °C ± 5 °C or at the minimum recommended operation temperature, whichever is lower. The test is carried out as described in **7.5.1** of IS 15683.

8.10.2.2 No hazardous changes shall occur to the valve assembly such as splinters, fractures, or cracks. The valve shall then be capable of withstanding the test pressure (P_t) without bursting.

8.10.3 *Test for Exposure to Extinguishing Medium*

8.10.3.1 Immerse complete plastic parts in the extinguishing (water based only) media with which they are to be used. Place the container of media, with the samples in place of preheated oven at 90 °C ± 5 °C for 10 days. After the test exposure, cool the samples in air at 27 °C ± 5 °C for at least 24 h and then observe the cracking or brittleness.

8.10.3.2 Following the exposure, inspect the component for cracking or brittleness. No cracking or brittleness shall be permitted.'

(*Page* 11, *clause* **8.16**) — Substitute the following for the existing:

'**8.16 Requirements for Pressure Gauges and Indicators for Low-Pressure Extinguishers**

8.16.1 *General*

8.16.1.1 A rechargeable extinguisher of the stored-pressure type (except carbon dioxide) employing a single chamber for both the extinguishing medium and the expellant gas shall be equipped with a pressure gauge to show the amount of pressure in the chamber regardless of if the valve is opened or closed.

8.16.1.2 The operable pressure range of the gauge shall reflect preferably the operating temperature-pressure relationship of the extinguisher (*see* **7.1** of IS 15683).

8.16.1.3 The pressure gauge face shall indicate the appropriate units for which the gauge is calibrated, such as bar, or kPa, or any other of pressure units.

8.16.1.4 The minimum indicated range of the pressure in the gauge shall be 0 bar to 20 bar.

The gauge dial shall indicate, in green, the operable pressure range of the extinguisher. The zero, service, and maximum indicated gauge pressures shall be shown with suitable marks. The arc of the dial from the zero pressure point to the lower end of the operable range shall read 'recharge' or suitably marked. The arc of the dial from the higher end of the operable range to the maximum indicated pressure shall read 'overcharged' or suitably marked. The area of service pressure range shall be marked with suitable colour. All numerals, letters, and characters in the recharge, operable, and overcharge portions of the dial shall be marked with any distinguished colour. Pointers shall be of prominent colour preferably contrast to the base colour, and the tip of the pointer shall end in the arc.

8.16.2 *Calibration/Checking/Verification Test for Pressure Gauges and Indicators*

The error of a pressure gauge at the indicated service pressure (P_s) shall not exceed ± 4 percent of the service pressure. The error at the upper and lower limits of the operable range shall not exceed ± 4 percent of the service pressure for powder and water-based extinguisher gauges and ± 8 percent of the charging pressure for clean agent extinguisher gauges. At the zero-pressure mark, the error shall not exceed - 0 percent to + 12 percent of the service pressure (P_s). At the maximum indicated pressure, the error shall not exceed ± 15 percent of the service pressure (P_s). Calibrate pressure gauge from a NABL accredited lab or in-house with the help of dead weight gauge tester or a piping apparatus with a calibrated master gauge.'

8.16.3 *Burst Strength Test — Gauges and Indicators*

8.16.3.1 A pressure gauge or an indicator shall withstand, for 1 min, a pressure of minimum 25 kg/cm^2 without rupture.

8.16.3.2 Attach the sample gauge or indicator to a hydraulic pressure pump after all air has been excluded from the test system. Place the sample in a test cage and apply pressure slowly (preferably at a rate of approximately 2.0 MPa/min) until the required test pressure is reached. Hold the pressure at this point for 1 min.

8.16.4 *Water Resistance Test — Gauges and Indicators*

A gauge or indicator for use on an extinguisher shall remain watertight after being immersed at a depth of 0.3 m in water for 2 h, and after being subjected to the salt-spray corrosion test (*see* **7.6.1** of IS 15683).'

(*Page* 13, *clause* **8.19**) — Substitute the following for the existing:

'**8.19 Gasket and O-rings**

8.19.1 *Ozone Test*

Keep the rubber material in ozone chamber at a concentration of 50 pphm ± 5 pphm at 40 °C ± 5 °C for 72 h. No cracking, crazing, and breaking shall be detected when observed under two times magnifying glass after 72 h.'

[*Page* 14, *clause* **9.1** (*see also Amendment No.* 2)] — Substitute the following for the existing:

'**9.1 Colour**

A small band of distinguishing colour of approximately 5 percent/prominent of surface area shall be painted or labelled (as per IS 17917) for different type of extinguishers as given below:

Extinguishers	*Band Colour*
Water-based extinguishers	Red
Powder-based extinguishers	Blue
CO_2 based extinguishers	Black
Clean agent extinguishers	Green
Foam-based extinguishers	Yellow
Water mist extinguishers	Red'

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