Australian/New Zealand Standard™

Portable fire extinguishers

Part 6: Specific requirements for carbon dioxide type extinguishers

1 SCOPE

This Standard specifies requirements for portable rechargeable fire extinguishers of the carbon dioxide type. It does not apply to the design and construction of the gas cylinder within which the carbon dioxide is contained.

2 APPLICATION

Portable, rechargeable, carbon dioxide fire extinguishers shall comply with AS/NZS 1841.1 and the requirements of this Standard.

Where requirements differ, this Standard shall take precedence.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
2030	The verification, filling, inspection, testing and maintenance of cylinders for storage and transport of compressed gases
2030.1	Part 1: Cylinders for compressed gases other than acetylene
2473	Valves for compressed gas cylinders
2473.1	Part 1: Specifications, type testing and manufacturing tests and inspections
3791	Hydraulic hose
4078	Fire protection—Fire extinguishing media—Carbon dioxide
AS/NZS	
1841	Portable fire extinguishers
1841.1	Part 1: General requirements

Hazardous Substances (Compressed Gases) Regulations 2001 (New Zealand)

Hazardous Substances and Noxious Organisms Regulations 2001 (New Zealand)

4 EXTINGUISHANT

The carbon dioxide gas extinguishant shall comply with AS 4078.

Commercial dry nitrogen is used for pressurization for filling ratio No. 2 (see Clause 5(b)).

5 FILLING RATIO

Carbon dioxide type extinguishers shall be filled to one of the following ratios:

(a) When the extinguisher is required to operate at temperatures > –20°C or < 65°C, the maximum filling ratio shall be 0.667.

(b) When the extinguisher is required to operate at temperatures below –20°C, the maximum filling ratio shall be 0.50. A pressure of up to 1.4 MPa of nitrogen may be superimposed above the normal pressure in the container at 15°C.

(c) Where the extinguisher is expected to be exposed to temperatures above 65°C, specialist advice about filling ratios shall be obtained and followed.

Extinguishers shall be filled using the filling ratio specified in Item (a) except where special climatic conditions exist, i.e., exposure to low temperatures.

NOTE: Filling ratio is the ratio of mass of liquefiable gas in the cylinder to the mass of water the cylinder will hold at 15°C.

6 FILL TOLERANCE

The extinguisher shall be dry internally and be filled with dry carbon dioxide to the specified maximum filling ratio within a tolerance of +0, –2.5%, the mass being determined by weighing.

7 MATERIALS AND CONSTRUCTION

The cylinder shall be designed and constructed in accordance with one of the approved cylinder specifications listed in AS 2030.1 and the Hazardous Substances and Noxious Organisms Regulations 2001 (Class 2-Gases) (New Zealand), or Hazardous Substances (Compressed gases) regulations 2001 (New Zealand), as applicable to carbon dioxide.

The valve shall be fitted direct to the cylinder; adaptors shall not be used.

8 VALVE STEM THREAD

The valve stem thread and mating cylinder neck thread shall comply with AS 2030.1 or shall withstand a pressure of not less than 10 times the cylinder test pressure.

9 VALVE

The body of the valve shall comply with this Standard and AS 2473.1. Castings shall not be used.

The valve shall be provided with a safety release incorporating an anti-recoil device, so arranged as to release the gas when the pressure reaches a value between 17.9 MPa and the cylinder test pressure.

The aggregate area of the limiting orifice on the safety device channel shall be greater than 0.5 mm^2 per kilogram of cylinder water capacity.

10 DISCHARGE FITTINGS

10.1 General

Carbon dioxide type fire extinguishers need not be fitted with a hose, so long as they have either a swivel horn or a fixed nozzle. Any extinguisher fitted with a fixed nozzle or swivel horn shall discharge in the direction parallel to the plane of the handle.

10.2 Discharge horn

10.2.1 *General*

A discharge horn shall be constructed of electrically non-conductive material.

10.2.2 *Horn fitted to valve*

Where the horn is fitted directly to the operating head and is intended to be adjustable, the joint shall be constructed so that it enables free movement without leaks developing during testing and shall be of a type that will enable the horn to be directed without being held in position.

10.2.3 *Horn fitted to hose*

Where the horn is connected to the discharge head by a hose, the following shall be provided:

(a) Means for firmly securing it to the body of the extinguisher when not in use. This may be by clips or other means that provide for quick release.

(b) A handgrip on the hose or horn constructed of thermal insulating material to protect the operator's hand from the effects of low temperature.

(c) Means to prevent the separation of the hose and the horn during use (e.g., by a connection becoming loose).

11 DISCHARGE HOSE

Where a discharge hose is provided it shall be flexible and have a minimum working pressure of 15.5 MPa and comply with the performance requirements of AS 3791 for Class 100R type hose. The hose assembly shall not be subjected to any internal pressure until the extinguisher is in operation.

12 MARKING

In addition to the requirements of AS/NZS 1841.1 every carbon dioxide-type extinguisher shall be marked with the following:

(a) The words 'CARBON DIOXIDE'.

(b) The size, in terms of the mass of carbon dioxide, in kilograms.

(c) The cylinders shall be permanently marked in accordance with the requirements of AS 2030.1.

(d) The full and empty mass of the individual extinguisher shall be stamped on the valve. The mass shall be expressed, in kilograms, to two decimal places. The mass shall include the valve, internal discharge tube and carrying handle, but no horn or hose and horn assembly. The full mass shall be the empty mass plus nominal charge.

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