Australian Standard™

Fibre reinforced plastics (FRP) aluminium alloy gas cylinders—Hoop overwrapped

Standards Australia

This Australian Standard was prepared by Committee ME-002, Gas Cylinders. It was approved on behalf of the Council of Standards Australia on 31 July 2002 and published on 20 August 2002.

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PREFACE

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee ME-002, Gas Cylinders, to supersede AS 2764—1985, *Fibre reinforced plastic (FRP) aluminium alloy gas cylinders—Hoop overwrapped*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard, rather than an Australian/New Zealand Standard.

The objective of this Standard is to specify the limitations of design and manufacture of FRP aluminium alloy gas cylinders as these offer higher stored capacity to mass ratios than available with conventionally manufactured cylinders, and are expected to have application in portable breathing apparatus and where mass is critical. The technology was developed for the United States space program.

The Standard provides for hoop overwrapped construction only, and not for totally overwrapped construction.

This Standard specifies a bonfire test to establish the performance of the complete cylinder system. Performance in this test depends on the valve and safety relief device (if fitted) as well as the cylinder and the cylinder lading. It is therefore necessary for the purchaser to specify any required departures from the method given in this Standard.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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Fibre reinforced plastics (FRP) aluminium alloy gas cylinders—Hoop overwrapped

1 SCOPE

This Standard specifies requirements for the materials, design, manufacture, inspection, pressure tests and markings of aluminium alloy gas cylinders reinforced by hoop overwrapping with fibre reinforced plastics (FRP), intended for storage and transport of compressed gases, and of water capacity exceeding 0.10 kg but not exceeding 130 kg.

NOTE: Appendix A lists the suggested minimum information that should be supplied by the purchaser when ordering gas cylinders covered by this Standard.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1391	Methods for tensile testing metals
1777	Aluminium cylinders for compressed gases—Seamless—0.1 kg to 130 kg
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
2337	Gas cylinder test stations
2337.1	Part 1: General requirements, inspections and tests—Gas cylinders
2473	Valves for compressed gas cylinders (threaded outlet)
3635	Unified (ISO inch) screw threads, associated gauges and gauging practice
ISO	
11439	Gas cylinders—High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles
ANSI	
B1.20.3	Dryseal pipe threads (inch)
B1.20.5	Gauging for dryseal pipe threads (inch)
B57.1	Compressed gas cylinder valve outlet and inlet connections (identical with CGA V-1 and CSA B96)
ASTM	
D 2343	Test method for tensile properties of glass fibre strands, yarns and rovings used in reinforced plastics
D 2344	Test method for short-beam strength of polymer matrix composite materials and their laminates
DIN	
477	Gas cylinder valves
MIL-R-60346B 4 April 1975	Military specifications, roving, glass, fibrous (for filament winding applications)