SOUTH AFRICAN NATIONAL STANDARD

Shut-off valves for transportable, refillable liquefied petroleum gas cylinders

WARNING
This standard references other documents normatively.
SANS 199:2016
Edition 3.1

Table of changes

<table>
<thead>
<tr>
<th>Change No.</th>
<th>Date</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amdt 1</td>
<td>2016</td>
<td>Amended to update the introduction, the scope, terms and definitions, the requirements for copper alloys and for valve outlet and inlet threads, to refer to bleed valves and screws, to update dimensional details for inlet and outlet connections and valve type tests, to clarify requirements to be tested, to change the annex on production testing and inspection (annex C) from informative to normative, and to update the bibliography.</td>
</tr>
</tbody>
</table>

Acknowledgement

The SABS Standards Division wishes to acknowledge the valuable assistance derived from publications of the International Organization for Standardization.

Foreword

This South African standard was approved by National Committee SABS/TC 058, Vessels and systems under pressure, in accordance with procedures of the SABS Standards Division, in compliance with annex 3 of the WTO/TBT agreement.

This document was approved for publication in September 2016.

This document supersedes SANS 199:2013 (edition 3).

A vertical line in the margin shows where the text has been technically modified by amendment No. 1.

Annexes A, B and C form an integral part of this document. Annex D is for information only. Amdt 1

Compliance with this document cannot confer immunity from legal obligations.

Introduction

This South African standard is based on the International Standard ISO 15995, Gas cylinders – Specifications and testing of LPG cylinder valves – Manually operated. Amdt 1

This standard calls for the use of substances and procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

It has been assumed in the drafting of this standard that execution of its requirements will be entrusted to appropriately qualified and experienced people.
SANS 199:2016
Edition 3.1

Contents

Acknowledgement

Foreword

Introduction .................................................................................................................................. 1

1 Scope ..................................................................................................................................... 5

2 Normative references ............................................................................................................. 5

3 Terms and definitions .............................................................................................................. 6

4 Design and specification ........................................................................................................ 8

4.1 General ................................................................................................................................. 8

4.2 Materials ............................................................................................................................... 9

4.3 Essential components .......................................................................................................... 10

4.4 Optional components .......................................................................................................... 12

4.5 Leak tightness ....................................................................................................................... 13

4.6 Operating torque ................................................................................................................. 13

4.7 Opening torque .................................................................................................................... 13

4.8 Closing torque ..................................................................................................................... 13

4.9 Specific requirements .......................................................................................................... 13

4.10 Strength requirements for internally threaded valve outlets .......................................... 13

5 Valve type tests .................................................................................................................... 17

5.1 General ................................................................................................................................. 17

5.2 Test conditions ..................................................................................................................... 17

5.3 External and internal tightness tests (test numbers 2, 5, 8, 11, 12, 13, 16, 17 and 18) ......................................................................................................................... 17

5.4 Hydraulic pressure test (test number 1) ............................................................................. 19

5.5 External and internal tightness test (test number 2) .......................................................... 19

5.6 Valve closure test (test number 3) ...................................................................................... 19

5.7 Valve stem test (test number 4) ......................................................................................... 20

5.8 External and internal tightness test (test number 5) .......................................................... 20

5.9 Handwheel fire exposure test (test number 6) ................................................................... 20

5.10 Impact test (test number 7) ............................................................................................... 22

5.11 External and internal tightness test (test number 8) ......................................................... 23

5.12 Resistance to excessive closing torque test (test number 9) ............................................ 23

5.13 Resistance to excessive opening torque test (test number 10) ......................................... 24

5.14 External tightness test (test number 11) ........................................................................... 24

5.15 External and internal tightness test (test number 12) ....................................................... 24

5.16 External and internal tightness test after ageing (test number 13) ................................. 25

5.17 Test for excess flow valves (test number 14) .................................................................... 25

5.18 Endurance test (test number 15) ...................................................................................... 25

5.19 External and internal tightness test (test number 16) ....................................................... 26

5.20 External and internal tightness test – High temperature (test number 17) ...................... 26

5.21 External and internal tightness test – Low temperature (test number 18) ...................... 26

5.22 Examination of dismantled valve number 6 (test number 19) ........................................ 26

5.23 Test for pressure relief valve (test number 20) .................................................................. 26

5.24 Strength test for internally threaded valve boss (test number 21) ................................. 27

© SABS
## Contents (concluded)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6  Documentation and test report</td>
<td>27</td>
</tr>
<tr>
<td>7  Marking</td>
<td>28</td>
</tr>
<tr>
<td><strong>Annex A</strong> (normative) Specific test requirements for valves for cylinders up to and including 20 L water capacity</td>
<td>29</td>
</tr>
<tr>
<td><strong>Annex B</strong> (normative) Notes to purchasers</td>
<td>31</td>
</tr>
<tr>
<td><strong>Annex C</strong> (normative) Production testing and inspection</td>
<td>32</td>
</tr>
<tr>
<td><strong>Annex D</strong> (informative) Valve impact test</td>
<td>33</td>
</tr>
<tr>
<td>Bibliography</td>
<td></td>
</tr>
</tbody>
</table>
Shut-off valves for transportable, refillable liquefied petroleum gas cylinders

1 Scope

This standard specifies the requirements for the design, specification and type testing of dedicated LPG cylinder valves specifically for use with transportable refillable LPG cylinders from 0,5 L up to and including 150 L water capacity. It includes references to associated equipment for vapour or liquid service.

This standard does not apply to fixed automotive installations.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. Information on currently valid national and international standards can be obtained from the SABS Standards Division.

CGA V-1, Standard for compressed gas cylinder valve outlet and inlet connections.

EN 12164, Copper and copper alloys – Rod for free machining purposes.

EN 12165, Copper and copper alloys – Wrought and unwrought forging stock.

EN 12167, Copper and copper alloys – Profiles and bars for general purposes.


SANS 1237, Single-stage regulators for liquefied petroleum gas (LPG).

SANS 1306-1/ISO 228-1, Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions, tolerances and designation.

SANS 1774, Liquefied petroleum gases.

SANS 2859-1/ISO 2859-1, Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection.