DIN EN ISO 11118:2020-09 (E)

Gas cylinders - Non-refillable metallic gas cylinders - Specification and test methods (ISO 11118:2015 + Amd 1:2019) (includes Amendment :2020)

Contents

Page

European foreword ... 4

[A1] European foreword to Amendment A1 [A1] ... 5

Foreword ... 6

[A1] Foreword to Amendment 1 [A1] ... 8

Introduction ... 9

1 Scope ... 10

2 Normative references ... 10

3 Terms and definitions ... 11

4 Symbols ... 12

5 Materials ... 12
5.1 General requirements ... 12
5.2 Material types ... 13
5.2.1 Carbon and low-alloy steels ... 13
5.2.2 Aluminium and aluminium alloy ... 13
5.2.3 Austenitic stainless steels ... 13
5.3 Chemical compositions ... 14
5.3.1 Carbon and low-alloy steels ... 14
5.3.2 Aluminium and aluminium alloys ... 14

6 Inspection and testing ... 15

7 Design ... 15
7.1 General requirements ... 15
7.2 Calculation of pressure containing parts ... 15
7.3 Design drawings ... 16

8 Construction and workmanship ... 16
8.1 Construction ... 16
8.1.1 Types of construction of cylinder shell ... 16
8.1.2 Cylinder non-refillability ... 20
8.1.3 Pressure relief devices ... 20
8.2 Workmanship ... 20

9 Type approval procedure ... 21
9.1 General requirements ... 21
9.2 Prototype tests ... 21
9.2.1 General ... 21
9.2.2 Material tests ... 21
9.2.3 Tensile tests ... 22
9.2.4 Burst tests ... 23
9.2.5 Drop tests ... 24
9.2.6 Dimension checks ... 25
9.2.7 Valve to cylinder interface test ... 25
9.3 Design type approval ... 25

10 Batch tests 26
10.1 General requirements 26
10.2 Failure to meet test requirements 26
11 Tests on every cylinder 26
11.1 [A1⟩ Visual inspection ⟨A1] 26
11.2 [A1⟩ Proof pressure test ⟨A1] 26
11.3 [A1⟩ Leak testing ⟨A1] 27
11.4 [A1⟩ Rejection criteria ⟨A1] 27
11.5 [A1⟩ Repairs ⟨A1] 27
12 Markings 27
12.1 General 27
12.2 Manufacturing and operational markings 27
12.3 Other markings 28
13 Test reports and certificate of compliance 28
Annex A (normative) Non-refillable sealing devices — Specifications and prototype testing 29
A.1 General 29
A.2 Requirements 29
A.2.1 General 29
A.2.2 Requirements for non-refillable valves 29
A.2.3 Requirements for pierceable metal sealing membranes 30
A.3 Prototype tests of permanently attached non-refillable valves 31
A.3.1 General 31
A.3.2 Test valves 32
A.4 Prototype tests of pierceable metal sealing membranes 33
A.4.1 General 33
A.4.2 Schedule of tests 34
A.4.3 Membrane/cylinder interface test 34
A.4.4 Leak tightness test 34
Annex B (informative) Type approval certificate 35
Annex C (informative) Certificate of compliance 37
Annex D (informative) Yield point elongation (YPE) 39
Bibliography 42