ISO 18172-1:2007-03 (E)

Gas cylinders - Refillable welded stainless steel cylinders - Part 1: Test pressure 6 MPa and below

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms, definitions and symbols 2
3.1 Terms and definitions 2
3.2 Symbols 3

4 Materials and heat treatment 4
4.1 General 4
4.2 Categories 5
4.3 Heat treatment 5
4.4 Test requirements 5

5 Design 5
5.1 General requirements 5
5.2 Calculation of cylindrical shell wall thickness 6
5.3 Design of convex ends 6
5.4 Minimum wall thickness 9
5.5 Ends of other shapes 9
5.6 Design of openings 9

6 Construction and workmanship 9
6.1 General 9
6.2 Welding procedures 10
6.3 Cryoforming procedure 10
6.4 Welded joints of pressure-containing parts 10
6.5 Non-pressure-containing attachments 10
6.6 Valve protection 11
6.7 Neck threads 11
6.8 Visual examination 11

7 New design tests 12
7.1 General requirements 12
7.2 Verifications and tests 13
7.3 Descriptions of tests 13
7.4 Design testing certificate 14

8 Batch tests 14
8.1 General 14
8.2 Information 15
8.3 Tensile test 15
8.4 Bend test 18
8.5 Macroscopic examination of weld cross-sections 20
8.6 Checks and verifications 20

9 Tests on every cylinder 21

9.1 Pressure test 21
9.2 Hardness test 21
9.3 Leakage test 21

10 Failure to meet test requirements 21

11 Markings 22

12 Certificate 22

Annex A (normative) Radiographic examination of welds 23

Annex B (normative) Description and evaluation of manufacturing defects and conditions for rejection of welded stainless steel gas cylinders at time of visual inspection 25

Annex C (informative) Examples of design and batch testing certificates 27

Annex D (normative) Manufacturer's markings for LPG 32

Bibliography 33