ISO/TR 13086-5:2022-06 (E)

Gas cylinders - Information for design of composite cylinders - Part 5: Impact testing of composite cylinders

Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Low energy impact ... **1**
4.1 General ... 1
4.2 Visible indications ... 2
4.3 Concepts in standards ... 2
4.3.1 General ... 2
4.3.2 30 J impact level ... 2
4.3.3 488 J impact level ... 2
4.3.4 1 200 J impact level ... 2
4.3.5 Consequences ... 3
4.4 Test concepts ... 3

5 High energy impact (accidents) ... **4**
5.1 General ... 4
5.2 Visible indications ... 4
5.3 Design influence ... 4

6 Drop impact ... **6**
6.1 General ... 6
6.2 Test scenarios ... 6
6.3 Design influences ... 7

7 High velocity impact ... **8**
7.1 General ... 8
7.2 Test parameters ... 8
7.3 Test results analysis ... 9

8 Failure considerations ... **10**

9 Inspection and examination ... **11**

10 Field incidents ... **12**
10.1 Bridge hit ... 12
10.2 Rollovers ... 13
10.3 Rollover with penetration ... 13
10.4 Vehicle collision ... 13
10.5 Forklift impact ... 14
10.6 Other incidents ... 15

11 Impact projects ... **15**

12 Discussion ... **15**

13 Summary ... **16**

Annex A (informative) **Low energy impact testing** ... **17**

Annex B (informative) **Drop impact testing (low pressure liquified gas, up to 50 l)** ... **19**

Annex C (informative) **Drop impact testing (high pressure)** **20**
Annex D (informative) **High velocity impact testing** **21**
Annex E (informative) **Alternative high velocity impact testing** **22**
Bibliography **24**