ISO 12405-2:2012-07 (E)

Electrically propelled road vehicles - Test specification for lithium-ion traction battery packs and systems - Part 2: High-energy applications

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Symbols and abbreviated terms 4

5 General requirements 5
5.1 General conditions 5
5.2 Test sequence plan 6
5.3 Tests 6
5.4 Battery pack - typical configuration 8
5.5 Battery system - typical configuration 8
5.6 Preparation of battery pack and system for bench testing 11

6 General tests 11
6.1 Pre-conditioning cycles 11
6.2 Standard cycle (SC) 12

7 Performance tests 12
7.1 Energy and capacity at RT 12
7.2 Energy and capacity at different temperatures and discharge rates 14
7.3 Power and internal resistance 17
7.4 Energy efficiency at fast charging 24
7.5 No load SOC loss 26
7.6 SOC loss at storage 28
7.7 Cycle life 29

8 Reliability tests 40
8.1 Dewing (temperature change) 40
8.2 Thermal shock cycling 43
8.3 Vibration 43
8.4 Mechanical shock 49

9 Abuse tests 50
9.1 Information 50
9.2 Short circuit protection 50
9.3 Overcharge protection 51
9.4 Over-discharge protection 51

Annex A (informative) Battery pack and system and overview on tests 53

Annex B (informative) Examples of data sheets for battery pack and system testing 55

Annex C (informative) Example of test conditions 59

Bibliography 60