ISO 19453-6:2026-09 (E)

Road vehicles - Environmental conditions and testing for electrical and electronic equipment for drive system of electric propulsion vehicles - Part 6: Traction battery packs and systems

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Symbols and abbreviated terms 3
4.1 Symbols 3
4.2 Abbreviated terms 4

5 Operating modes 4
5.1 General 4
5.2 Operating mode 5 5
5.3 Operating mode 6 5
5.4 Operating mode 7 6

6 Functionalstatusclassification 6

7 Functional status checks 6
7.1 Electrical requirements check 6
7.1.1 General 6
7.1.2 Equipotential bonding 6
7.1.3 Isolation resistance test 7
7.1.4 Withstand voltage test 7
7.2 Mechanical requirements check 7
7.2.1 Technical tightness check of battery pack or system enclosure 7
7.2.2 Leak tightness check of internal temperature control system 7

8 Tests and requirements 8
8.1 Mechanical categories of battery packs or systems 8
8.1.1 General 8
8.1.2 Category 1 8
8.1.3 Category 2 9
8.1.4 Category 3 9
8.2 Pre-conditioning 9
8.2.1 General 9
8.2.2 Thermo-mechanical pre-conditioning 10
8.3 Thermal cycling tests 10
8.3.1 General 10
8.3.2 Thermal cycling for DUT without internal temperature control system 11
8.3.3 Thermal cycling for DUT with internal temperature control system 12
8.3.4 Thermal cycling with electric operation 13
8.4 Structural durability and strength tests 16
8.4.1 General 16
8.4.2 Fixture 16

8.4.3 Pre-conditioning for mechanical tests ... 16
8.4.4 Durability test ... 16
8.4.5 Mechanical shock ... 23
8.4.6 Requirements ... 24
8.5 Water protection ... 24
8.5.1 Test ... 24
8.5.2 Requirements ... 24
8.6 Dust protection ... 24
8.6.1 Test ... 24
8.6.2 Requirements ... 25
8.7 Humid heat condensation test ... 25
8.7.1 Purpose ... 25

8.7.2 Test ... 25
8.7.3 Requirements ... 27
8.8 Damp heat, steady state test ... 27
8.8.1 Purpose ... 27
8.8.2 Test ... 28
8.8.3 Requirement ... 28
8.9 Corrosion ... 28
8.9.1 General ... 28
8.9.2 Mixed gas corrosion ... 28
8.9.3 Salt-spray test for external mounting location ... 29
8.9.4 Salt corrosion test for internal mounting location ... 30
8.10 Chemical resistance ... 33

Annex A (informative) Example of leak tightness check ... 34

Annex B (informative) Test concept for additional mechanical loads on a battery pack or system ... 35

Annex C (informative)Exampleofelectricalandthermalprofileforthemechanicaldurability test ... 38

Annex D (informative)Exampleofelectricalprofileforheatdissipation ... 39

Annex E (informative)Exampleofacceptancecriterionforcorrosioninfiltration ... 40

Bibliography ... 42