# DIN EN ISO 18243:2026-10 (E)

## Electrically propelled mopeds and motorcycles - Test specifications and safety requirements for lithium-ion battery systems (ISO 18243:2025)

## Contents

Page


**Foreword** ..... **v**

**Introduction** ..... **vi**

**1 Scope** ..... **1**

**2 Normative references** ..... **1**

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

**4 Symbols and abbreviated terms** ..... **5**
4.1 Symbols ..... 5
4.2 Abbreviated terms ..... 6

**5 Technical requirements** ..... **6**
5.1 General safety requirements ..... 6
5.2 Testing of general safety requirements ..... 7
5.2.1 Evidence of leakage ..... 7
5.2.2 Evidence of rupture ..... 7
5.2.3 Evidence of fire ..... 7
5.2.4 Evidence of explosion ..... 7
5.2.5 Isolation resistance ..... 7
5.3 Mechanical requirements ..... 7
5.4 Climatic requirements ..... 7
5.4.1 Thermal shock ..... 7
5.4.2 Dewing ..... 8
5.4.3 Salt spray ..... 8
5.5 Simulated accident requirements ..... 8
5.5.1 Immersion into water ..... 8
5.5.2 Exposure to fire ..... 9
5.6 Electrical requirements ..... 9
5.6.1 Isolation resistance ..... 9
5.6.2 Short circuit protection ..... 9
5.7 Functional requirements ..... 10
5.7.1 General ..... 10
5.7.2 Overcharge protection ..... 10
5.7.3 Overdischarge protection ..... 10
5.7.4 Overcurrent protection ..... 10
5.7.5 Protection against internal overheating ..... 10
5.7.6 Low-temperature protection ..... 10

**6 General test methods** ..... **11**
6.1 General conditions ..... 11
6.2 Measurement accuracy ..... 11
6.3 DUT requirements and preparation of the DUT for testing ..... 12
6.3.1 DUT requirements ..... 12
6.3.2 Preparation of the battery subsystem and test bench ..... 12
6.3.3 Preparation of the battery pack or system and test bench ..... 12
6.4 Test sequence plan ..... 12
6.5 Tests ..... 12
6.6 Preconditioning cycles ..... 13
6.6.1 Purpose ..... 13
6.6.2 Test procedure ..... 13
6.7 Standard cycle (SC) ..... 14
6.7.1 Purpose ..... 14
6.7.2 Test procedure ..... 14

**7 Safety test procedures ..... 14**
7.1 Mechanical tests ..... 14
7.1.1 Vibration ..... 14
7.1.2 Mechanical shock ..... 15
7.1.3 Drop ..... 15
7.2 Climatic tests ..... 15
7.2.1 Thermal shock ..... 15
7.2.2 Dewing ..... 16
7.2.3 Salt spray ..... 18
7.3 Simulated accident tests ..... 18
7.3.1 Immersion into water ..... 18
7.3.2 Exposure to fire ..... 18
7.4 Electrical test — Short circuit protection ..... 19
7.5 Functional tests ..... 20
7.5.1 General procedures ..... 20
7.5.2 Overcharge protection ..... 20
7.5.3 Over discharge protection ..... 21
7.5.4 Overcurrent protection ..... 21
7.5.5 Protection against internal overheating ..... 22
**8 Performance test methods ..... 23**
8.1 Energy and capacity at RT ..... 23
8.1.1 Purpose ..... 23
8.1.2 Test procedure ..... 23
8.1.3 Requirements ..... 23
8.2 Energy and capacity at different temperature and discharge rates ..... 24
8.2.1 Purpose ..... 24
8.2.2 Test procedure ..... 24
8.2.3 Requirements ..... 26
8.3 Power and internal resistance ..... 27
8.3.1 Purpose ..... 27
8.3.2 Pulse power characterization profile ..... 27
8.3.3 Test procedure ..... 30
8.3.4 Requirements ..... 32
8.4 No load SOC loss ..... 32
8.4.1 Purpose ..... 32
8.4.2 Test procedure ..... 32
8.4.3 Test sequence ..... 33
8.4.4 Requirements ..... 34
8.5 SOC loss at storage ..... 34
8.5.1 Purpose ..... 34
8.5.2 Test procedure ..... 34
8.5.3 Test sequence ..... 35
8.5.4 Requirements ..... 35
8.6 Cycle life ..... 35
8.6.1 Purpose ..... 35
8.6.2 Preparation ..... 36
8.6.3 Test procedure ..... 36
8.6.4 Conditions ..... 37
8.6.5 Monitoring and data logging ..... 37
8.6.6 SOC determination ..... 37
8.6.7 End of test criteria ..... 37
8.6.8 Capacity fade ..... 38
8.6.9 Self-discharging rates ..... 38
8.6.10 Requirements ..... 38
8.7 Cycle life specific test (optional) ..... 39

**Annex A** (informative) **Battery pack and system** ..... **40**
**Annex B** (normative) **Description of the screen referenced in 7.3.2** ..... **44**
**Annex C** (informative) **Example of the cycle life specific test** ..... **45**
**Bibliography** ..... **46**