

DIN CEN/TR 16251:2016-08 (E)

Railway applications - Environmental conditions - Design guidance for rolling stock;
English version CEN/TR 16251:2016

Contents	Page
European foreword.....	5
Introduction	6
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	6
4 Overview - List of covered topics.....	8
5 Design guidance for vehicle.....	9
5.1 General.....	9
5.2 Temperature related	9
5.3 Snow and ice related.....	9
5.3.1 Ice related	9
5.3.2 Snow related	9
5.3.3 Anti-icing and de-icing	10
5.4 Humidity related	10
5.4.1 General.....	10
5.4.2 Test description.....	11
5.4.3 Evaluation criteria	11
5.5 Thermal insulation.....	12
5.6 Mechanical fixations of inner structures to the car body, have to be thermally interrupted by insulating spacers to avoid thermal bridges. Collision with animals.....	12
5.7 Condensation	12
5.7.1 General.....	12
5.7.2 Recommendations	13
5.7.3 Test description.....	13
5.7.4 Evaluation criteria	13
6 Design guidance for sub systems.....	13
6.1 Snow plough.....	13
6.1.1 General.....	13
6.1.2 Design guidance.....	13
6.1.3 Proposal for evaluation	14
6.2 Bogie and running gear.....	16
6.2.1 General.....	16
6.2.2 Winter conditions	16
6.2.3 Summer conditions	16
6.2.4 Design guidance.....	16
6.3 Brake components integrated in bogie.....	18
6.3.1 General.....	18
6.3.2 Design guidance.....	18
6.3.3 Proposal for evaluation	19
6.4 Compressed air	21
6.4.1 General.....	21
6.4.2 Design guidance.....	21
6.5 Sanding equipment.....	21
6.5.1 General.....	21

6.5.2	Design guidance	22
6.5.3	Proposal for evaluation	22
6.6	Suspension level control system	23
6.6.1	General	23
6.6.2	Design guidance	23
6.6.3	Proposal for evaluation	23
6.7	Tilting system.....	23
6.7.1	General	23
6.7.2	Design guidance	24
6.7.3	Proposal for evaluation	24
6.8	Flange lubrication system	24
6.8.1	General	24
6.8.2	Design guidance	25
6.9	Windscreen	25
6.9.1	General	25
6.9.2	Design guidance	25
6.9.3	Proposal for evaluation	25
6.10	Side mirrors/cameras.....	27
6.10.1	General	27
6.10.2	Design guidance	27
6.10.3	Proposal for evaluation	27
6.11	Lights.....	28
6.11.1	General	28
6.11.2	Design guidance	28
6.11.3	Proposal for evaluation	28
6.12	Horns.....	29
6.12.1	General	29
6.12.2	Design guidance	29
6.13	Doors.....	30
6.13.1	General	30
6.13.2	Design guidance	30
6.13.3	Proposal for evaluation	30
6.14	Moveable steps	31
6.14.1	General	31
6.14.2	Design guidance	31
6.14.3	Proposal for evaluation	31
6.15	Pantograph.....	32
6.15.1	General	32
6.15.2	Design guidance	32
6.15.3	Proposal for evaluation	33
6.16	Automatic couplers.....	33
6.16.1	General	33
6.16.2	Design guidance	34
6.16.3	Proposal for evaluation	34
6.17	Cooling systems.....	35
6.17.1	General	35
6.17.2	Design guidance	35
6.17.3	Proposal for evaluation	35
6.18	Traction.....	36
6.18.1	General	36
6.18.2	Design guidance	36
6.19	Battery	37
6.19.1	General	37

6.19.2 Design guidance..... 37
6.20 Toilet and water systems 38
6.20.1 General..... 38
6.20.2 Design guidance..... 38
6.20.3 Proposal for evaluation 38
6.21 External cabinets, boxes for equipment, cables and connectors..... 40
6.21.1 General..... 40
6.21.2 Design guidance..... 40
6.21.3 Proposal for evaluation 40
Annex A (informative) Examples of protection for electrical and pneumatic connections 41
Annex B (informative) Examples for snow ploughs..... 43
Bibliography..... 45