DIN EN 18128-1:2026-09 (E)

Railway applications - New materials - Part 1: Guideline and validation methodology

Contents

Page

European foreword 4

Introduction 5

1 Scope 6

2 Normative references 6

3 Terms and definitions 6

4 Validation methodology 8
4.1 General 8
4.2 Concept 8
4.2.1 General 8
4.2.2 Specifications 8
4.3 Requirements and prioritization 9
4.4 Validation of requirements RX 9
4.5 Test and correlation 9
4.5.1 General 9
4.5.2 Is subset or full-scale testing required? 9
4.5.3 Subset or full-scale testing 10
4.5.4 Is the subset or full-scale test validated? 10
4.5.5 Is fitting test results with calculation required? 10
4.6 Part validated 10

5 Requirements validation 11
5.1 Static and instability 11
5.1.1 General 11
5.1.2 Preliminary design 11
5.1.3 Advanced design 12
5.1.4 Static and instability requirement validated 13
5.2 Fatigue 14
5.2.1 General 14
5.2.2 Preliminary design 15
5.2.3 Advanced fatigue design 16
5.2.4 Fatigue requirement validated 18
5.3 Crash 19
5.3.1 General 19
5.3.2 Preliminary design 19
5.3.3 Advanced design 21
5.3.4 Crash design requirement defined according to crash requirements 22
5.4 Impact 23
5.4.1 General 23
5.4.2 Preliminary design 23
5.4.3 Advanced design 25
5.4.4 Impact requirement validated 25
5.5 Assembly methods 26
5.5.1 General 26
5.5.2 Design process 26
5.6 Fire, smoke and toxicity 27
5.7 Electromagnetic compatibility and conductivity 27
5.8 External environment 28

6 Manufacturing 29

7 Maintenance 29

Annex A (informative) Modal analysis 30

Bibliography 31