

DIN EN 13262:2020-12 (E)

Railway applications - Wheelsets and bogies - Wheels - Product requirements

Contents

	Page
European foreword.....	5
Introduction	6
1 European scope	7
2 Normative references	7
3 Terms and definitions	8
4 Product definition	9
4.1 Chemical composition	9
4.1.1 Values to be obtained	9
4.1.2 Sampling position	9
4.1.3 Chemical analysis.....	9
4.2 Mechanical characteristics.....	10
4.2.1 Characteristics from the tensile testing.....	10
4.2.2 Hardness characteristics in the rim	12
4.2.3 Impact resistance characteristics.....	14
4.2.4 Fatigue characteristics	14
4.2.5 Toughness characteristics of the rim.....	15
4.3 Heat treatment homogeneity	17
4.3.1 Values to be obtained	17
4.3.2 Test pieces.....	17
4.3.3 Test method.....	17
4.4 Material cleanliness	17
4.4.1 Micrographic cleanliness	17
4.4.2 Internal integrity	19
4.5 Residual stresses	22
4.5.1 General	22
4.5.2 Values to be obtained	22
4.5.3 Test piece.....	22
4.5.4 Measurement methods	22
4.6 Surface characteristics.....	22
4.6.1 Surface finish.....	22
4.6.2 Surface condition for the oil injection hole	23
4.6.3 Surface integrity	23
4.7 Geometrical tolerances	24
4.7.1 General	24
4.7.2 Wear groove	26
4.8 Static imbalance.....	27
4.9 Corrosion protection	28
4.10 Marking	28
5 Product qualification	29
6 Conditions of supply of the product.....	29
7 Tips for choosing the steel grade.....	29
Annexe A (normative) Evaluation process for the acceptance of new materials.....	30
A.1 General.....	30
A.2 First step: Characterisation of a new steel grade	30
A.3 Step two: Testing in service	30
A.4 Step three: Report.....	31

Annexe B (informative) Examples of test benches for fatigue testing	32
B.1 Test piece	32
B.2 First test method.....	32
B.2.1 Test rig	32
B.2.2 Test control	32
B.3 Second test method	33
B.3.1 Test rig	33
B.3.2 Control of the test.....	34
B.4 Third test method.....	34
B.4.1 Test rig	34
B.4.2 Control of the test.....	35
Annexe C (informative) Strain gauge method of determining the variation in circumferential residual stresses deep under the running surface (destructive method)	36
C.1 Method principle.....	36
C.2 Procedure.....	36
C.2.1 Strain gauge equipment for a section of the rim before cutting the wheel (Figure C.1)	36
C.2.2 Making the cuts (Figure C.2).....	36
C.2.3 Operations to be performed during cutting.....	37
C.3 Calculation of the variation of the circumferential residual stress deep under the running surface	37
C.3.1 General	37
C.3.2 Calculation of the variation of the circumferential stress produced by cutting operation no. 1.....	37
C.3.3 Calculation of the variation of the circumferential stress produced by cutting operation no. 2.....	38
C.3.4 Calculation of the variation of the circumferential stress produced by cutting operation no. 3.....	38
C.3.5 Final diagram showing the variation of the circumferential stress deep under the running surface	38
Annexe D (normative) Product qualification	41
D.1 Introduction	41
D.2 General	41
D.3 Requirements	42
D.3.1 Requirements to be met by the manufacturing process	42
D.3.1.1 General	42
D.3.1.2 Quality organisation	42
D.3.1.3 Staff qualification.....	42
D.3.1.4 Equipment	42
D.3.2 Requirements to be met by the product.....	42
D.4 Qualification procedure	42
D.4.1 General	42
D.4.2 Documentation required	43
D.4.3 Evaluation of production facilities and production process.....	43
D.4.4 Laboratory tests	44
D.4.5 Wheel tests	44
D.4.5.1 Extended production control	44
D.4.5.2 Commissioning	45
D.4.5.3 Result of monitoring in service	45
D.5 Validity of the qualification	45

D.5.1	Condition of validity	45
D.5.2	Modification and extension.....	45
D.5.3	Transfer	45
D.5.4	Expiry	46
D.5.5	Withdrawal	46
D.6	Qualification record.....	46
	Annexe E (normative) Conditions of supply of the product	47
E.1	Introduction.....	47
E.2	General.....	47
E.3	Delivery states	48
E.4	Unit checks	48
E.5	Batch sampling check	48
E.5.1	Checks to be carried out	48
E.5.2	Batch homogeneity by measuring rim hardness	49
E.5.3	Orientation of residual stresses on treated wheels.....	50
E.5.4	Visual inspection.....	50
E.6	Quality plan	50
E.6.1	General.....	50
E.6.2	Objectives.....	50
E.6.3	Methods of application.....	50
E.7	Permissible repairs.....	51
E.8	Retest.....	51
	Annexe F (normative) Measurement of the hydrogen content at the time of development of steel for monobloc wheels.....	52
F.1	General	52
F.2	Sampling.....	52
F.3	Analysis method.....	52
F.4	Precautions	52
	Annexe G (informative) Common applications of steel grades	53
	Annexe ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2016/797/EC to be met.....	54
	Bibliography.....	57