

DIN EN 13674-1:2008-01 (E)

Railway applications - Track - Rail - Part 1: Vignole railway rails 46 kg/m and above
(includes Amendment A1:2007)

Contents		Page
Foreword		4
Introduction		6
1	Scope	8
2	Normative references	8
3	Terms and definitions	8
4	Information to be supplied by the purchaser	9
5	Steel grades	10
6	Profile drawings/properties/mass	10
7	Manufacture	10
7.1	Product integrity	10
7.1.1	Factory production control	10
7.1.2	Best practice manufacture	11
7.2	Blooms	11
7.3	Rails	11
7.4	Identification	11
7.4.1	Branding	11
7.4.2	Hot stamping	12
7.4.3	Cold stamping	12
7.4.4	Other identification	12
8	Qualifying tests	13
8.1	Procedure	13
8.2	Fracture toughness (K _{IC})	13
8.2.1	Test pieces and test methods	13
8.2.2	Qualifying criteria	13
8.3	Fatigue crack growth rate	14
8.3.1	Test method	14
8.3.2	Test pieces	14
8.3.3	Number of tests and test conditions	14
8.3.4	Qualifying criteria	14
8.4	Fatigue test	14
8.4.1	Test method	14
8.4.2	Test pieces	15
8.4.3	Number of tests and test conditions	15
8.4.4	Qualifying criteria	15
8.5	Residual stress in rail foot	15
8.5.1	Test method	15
8.5.2	Test pieces	15
8.5.3	Measurements	15
8.5.4	Qualifying criteria	15
8.6	Variation of centre line running surface hardness of heat treated rails	15
8.7	Tensile strength and elongation	16
8.8	Segregation	16

8.9	Other qualifying requirements	17
9	Acceptance tests	17
9.1	Laboratory tests	17
9.1.1	General	17
9.1.2	Chemical composition	17
9.1.3	Microstructure	21
9.1.4	Decarburisation	22
9.1.5	Oxide cleanness	22
9.1.6	Sulfur prints	22
9.1.7	Hardness	23
9.1.8	Tensile tests	23
9.1.9	Retest procedures	24
9.2	Dimension tolerances	24
9.2.1	Profile	24
9.2.2	Straightness, surface flatness and twist	25
9.2.3	Cutting and drilling	28
9.3	Gauges	28
9.4	Inspection requirements/tolerances for internal quality and surface quality	28
9.4.1	Ultrasonic test requirements	28
9.4.2	Surface quality	30
	Annex A (normative) Rail profiles	45
	Annex B (normative) Standard test method for the determination of the plane strain fracture toughness (K _{Ic}) of rails	70
	Annex C (normative) Method for the determination of rail foot surface longitudinal residual stresses	76
	Annex D (normative) Limiting sulfur prints	79
	Annex E (normative) Profile and drilling gauges	93
	Annex F (informative) Comparison of steel designations referred to in this standard compared to those in EN 10027-1 and EN 10027-2	105
	Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives	106
	Bibliography	107