

## High speed and mixed traffic

Specification	Grade	Chemical composition									Mechanical properties		
		% by mass									Rm (MPa)	Elongation (%)	BHN Hardness Centre line
		C	Si	Mn	P	S	Cr	Al	V	H2 (ppm)			
UIC 860-O	700	0.40/0.60	0.05/0.35	0.80/1.25	≤ 0.050	≤ 0.050					680/830	≥ 14	
	900A	0.60/0.80	0.10/0.50	0.80/1.30	≤ 0.040	≤ 0.040					880/1030	≥ 10	
	900B	0.55/0.75	0.10/0.50	1.30/1.70	≤ 0.040	≤ 0.040					880/1030	≥ 10	
EN 13674-1	R200	0.40/0.60	0.15/0.58	0.70/1.20	≤ 0.035	0.008/0.035	≤ 0.15	≤ 0.004	≤ 0.03	≤ 3.0	≥ 680	≥ 14	200/240
	R220	0.50/0.60	0.20/0.60	1.00/1.25	≤ 0.025	0.008/0.025	≤ 0.15	≤ 0.004	≤ 0.03	≤ 3.0	≥ 770	≥ 12	220/260
	R260	0.62/0.80	0.15/0.58	0.70/1.20	≤ 0.025	0.008/0.025	≤ 0.15	≤ 0.004	≤ 0.03	≤ 2.5	≥ 880	≥ 10	260/300
	R260Mn	0.55/0.75	0.15/0.60	1.30/1.70	≤ 0.025	0.008/0.025	≤ 0.15	≤ 0.004	≤ 0.03	≤ 2.5	≥ 880	≥ 10	260/300
	R350HT	0.72/0.80	0.15/0.58	0.70/1.20	≤ 0.020	≤ 0.025	≤ 0.15	≤ 0.004	≤ 0.03	≤ 2.5	≥ 1175	≥ 9	350/390
	R350LHT	0.72/0.80	0.15/0.58	0.70/1.20	≤ 0.020	≤ 0.025	≤ 0.30	≤ 0.004	≤ 0.03	≤ 2.5	≥ 1175	≥ 9	350/390
	R370CrHT	0.70/0.82	0.40/1.00	0.70/1.10	≤ 0.020	≤ 0.020	0.40/0.60	≤ 0.004	≤ 0.03	≤ 1.5	≥ 1280	≥ 9	370/410
EN 13674-2	R260Cr	0.40/0.60	0.20/0.45	1.20/1.60	≤ 0.025	≤ 0.025	0.40/0.60	≤ 0.004	≤ 0.06	≤ 2.5	≥ 880	≥ 10	260/300
IRS	880	0.60/0.80	0.10/0.50	0.80/1.30	≤ 0.030	≤ 0.030	-	≤ 0.015	-	≤ 1.6	≥ 880	≥ 10	≥ 260
	1080HH	0.60/0.80	0.10/0.50	0.80/1.30	≤ 0.030	≤ 0.030	-	≤ 0.015	-	≤ 1.6	≥ 1080	≥ 10	340/390
British Steel	Premium grade: BLF320	0.10/0.30	0.80/1.80	1.20/1.80	≤ 0.025	≤ 0.025	0.30/0.80	≤ 0.004	-	≤ 2.0	≥ 950	≥ 12	340/380
	Premium grade: BLF360	0.20/0.40	0.80/1.80	1.20/1.80	≤ 0.025	≤ 0.025	0.30/0.80	≤ 0.004	-	≤ 2.0	≥ 1200	≥ 13	350/390
	Premium grade: HP335	0.87/0.97	0.75/1.00	0.75/1.00	≤ 0.020	0.008/0.020	≤ 0.10	≤ 0.004	0.09/0.13	≤ 2.5	≥ 1175	≥ 7	335/375
	Premium grade: SF350	0.72/0.80	0.15/0.58	0.70/1.20	≤ 0.020	≤ 0.020	≤ 0.15	0.004	≤ 0.03	≤ 2.5	≥ 1175	≥ 9	350/390
	Premium grade: SFL350	0.72/0.80	0.15/0.58	0.70/1.20	≤ 0.020	≤ 0.020	≤ 0.30	≤ 0.004	≤ 0.03	≤ 2.5	≥ 1175	≥ 9	350/390

**Heavy haul tracks**

Specification	Grade	Chemical composition									Mechanical properties		
		% by mass									Rm (MPa)	Elongation (%)	BHN Hardness Centre line
		C	Si	Mn	P	S	Cr	Al	V	H2 (ppm)			
Arema	Carbon standard	0.74/0.86	0.10/0.60	0.75/1.25	≤ 0.020	≤ 0.020	≤ 0.3	≤ 0.01	≤ 0.01	-	≥ 985	≥ 10	≥ 310
	Low alloy standard	0.72/0.82	0.10/0.50	0.80/1.10	≤ 0.020	≤ 0.020	0.25/0.40	≤ 0.005	≤ 0.01	-	≥ 985	≥ 10	≥ 310
	Low alloy intermediate	0.72/0.82	0.10/1.00	0.70/1.25	≤ 0.020	≤ 0.020	0.40/0.70	≤ 0.005	≤ 0.01	-	≥ 1015	≥ 8	≥ 325
	Carbon high strength	0.74/0.86	0.10/0.60	0.75/1.25	≤ 0.020	≤ 0.020	≤ 0.3	≤ 0.01	≤ 0.01	-	≥ 1180	≥ 10	≥ 370
	Low alloy high strength	0.72/0.82	0.10/1.00	0.70/1.25	≤ 0.020	≤ 0.020	0.40/0.70	≤ 0.005	≤ 0.01	-	≥ 1180	≥ 10	≥ 370
EN 13674-1	R350HT	0.72/0.80	0.15/0.58	0.70/1.20	≤ 0.020	≤ 0.020	≤ 0.15	≤ 0.004	≤ 0.03	≤ 2.5	≥ 1175	≥ 9	350/390
	R350LHT	0.72/0.80	0.15/0.58	0.70/1.20	≤ 0.020	≤ 0.020	≤ 0.30	≤ 0.004	≤ 0.03	≤ 2.5	≥ 1175	≥ 9	350/390
	R370CrHT	0.70/0.82	0.40/1.00	0.70/1.10	≤ 0.020	≤ 0.020	0.40/0.60	≤ 0.004	≤ 0.03	≤ 1.5	≥ 1280	≥ 9	370/410
British Steel	Premium grade: SF350	0.72/0.80	0.15/0.58	0.70/1.20	≤ 0.020	≤ 0.020	≤ 0.15	≤ 0.004	≤ 0.03	≤ 2.5	≥ 1175	≥ 9	350/390
	Premium grade: SFL350	0.72/0.80	0.15/0.58	0.70/1.20	≤ 0.020	≤ 0.020	≤ 0.30	≤ 0.004	≤ 0.03	≤ 2.5	≥ 1175	≥ 9	350/390
	Premium grade: MHH375/MHH388	0.72/0.82	0.40/0.80	0.80/1.10	≤ 0.020	≤ 0.020	0.40/0.60	≤ 0.004	≤ 0.03	≤ 2.0	≥ 1280	≥ 12	381/408

## Urban transport

Specification	Grade	Chemical composition									Mechanical properties		
		% by mass									Rm (MPa)	Elongation (%)	BHN Hardness Centre line
		C	Si	Mn	P	S	Cr	Al	V	H2 (ppm)			
EN 14811	R200	0.40/0.60	0.15/0.58	0.70/1.20	≤ 0.035	≤ 0.035	≤ 0.15	≤ 0.004		≤ 3.0	≥ 680	≥ 14	200/240
	R220G1	0.50/0.65	0.15/0.58	1.00/1.25	≤ 0.025	≤ 0.025	≤ 0.15	≤ 0.004		≤ 3.0	≥ 780	≥ 12	220/260
	R260	0.62/0.80	0.15/0.58	0.70/1.20	≤ 0.025	≤ 0.025	≤ 0.15	≤ 0.004		≤ 2.5	≥ 880	≥ 10	260/300
Customer	R200V	0.40/0.48	0.15/0.58	0.70/1.10	≤ 0.035	≤ 0.035			0.08/0.20	≤ 3.0	≥ 680	≥ 15	200/260
BS7865	Conductor Rail	≤ 0.08	≤ 0.05	≤ 0.30	≤ 0.05	≤ 0.05							Resistance < 11.04 μΩ.cm
Customer	Conductor Rail	0.04/0.06		0.25/0.45	≤ 0.025	≤ 0.020					≥ 300		Resistance < 14 μΩ.cm
Customer	Conductor Rail	≤ 0.06	≤ 0.05	≤ 0.25	≤ 0.05	≤ 0.05							Resistance < 12.00 μΩ.cm
British Steel	Premium grade: ML200	0.20/0.30	0.20/0.30	1.20/1.50	≤ 0.025	≤ 0.025	≤ 0.10	≤ 0.004	0.10/0.16	≤ 3.0	≥ 685	≥ 14	200/240
	Premium grade: ML260	0.41/0.51	0.20/0.30	1.10/1.40	≤ 0.025	≤ 0.025	≤ 0.15	≤ 0.004	0.10/0.15	≤ 2.5	≥ 885	≥ 10	260/300
	Premium grade: ML330	0.73/0.78	0.65/1.00	1.10/1.40	≤ 0.025	≤ 0.025	≤ 0.15	≤ 0.004	0.07/0.15	≤ 2.5	≥ 1050	≥ 10	325/365

## Sleepers

Specification	Grade	Chemical composition									Mechanical properties		
		% by mass									Rm (MPa)	Elongation (%)	BHN Hardness Centre line
		C	Si	Mn	P	S	Cr	Al	V	H2 (ppm)			
EN 10025	S275	≤ 0.21		≤ 1.50	≤ 0.035	≤ 0.035			≤ 0.004		400/510	≥ 20	

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