

कास्ट पहिया विनिर्देश **CAST WHEEL SPECIFICATION**

रासायनिक कॉपोजिशन **CHEMICAL COMPOSITION IN %**

CHARACTERISTICS	IRS: R-19-93 Part III		MP 0 3900(DRAFT)	AAR M-208
	Class A (Carriage)	Class B (Wagon)	DSL LOCO MOV	Class C (CH-36)
Carbon	0.47 - 0.57	0.57 - 0.67	0.55 - 0.63	0.67 - 0.77
Manganese	0.60 - 0.80	0.60 - 0.80	0.70 - 0.85	0.60 - 0.90
Silicon	0.15 - 0.70	0.15 - 0.70	0.30 - 0.60	0.15 - 1.0
Phosphorous	0.03 Max	0.03 Max	0.030 Max	0.03
Sulphur	0.03 Max	0.03 Max	0.030 Max	0.005 - 0.040
Chromium	0.15 Max	0.15 Max	-	0.25
Nickel	0.25 Max	0.25 Max	-	0.25
Molybdenum	0.06 Max	0.06 Max	0.07 - 0.15	0.1
Cr+Ni+Mo	0.40 Max	0.40 Max	-	-
Vanadium	-	-	0.10 - 0.16	0.04
Hydrogen ppm (Max)	3	3	2.5	NS
Nitrogen % (Max)	0.007	0.007	-	NS

यांत्रिक और धातु गुण **MECHANICAL & METALLURGICAL PROPERTIES**

CHARACTERISTICS	Rim		Plate		Rim		Plate	
	Rim	Plate	Rim	Plate	Rim	Plate	Rim	Plate
U.T.S N/mm <sup>2</sup> (Min)	900	800	930	800	100 Kg/mm <sup>2</sup>	85 Kg/mm <sup>2</sup>	-	-
Yield Strength (Min)	50% of UTS	50% of UTS	50% of UTS	50% of UTS	-	-	-	-
Elongation % (Min)	5	7	4.5	7	8	12	-	-
Hardness Range (BHN)	255 - 320		277 - 341		300 - 340		321 - 363	
Grain Size (ASTM)	6 - 8		6 - 8		6 - 8		-	
Micro Structure	Fine Pearlite		Fine Pearlite		Fine Pearlite		-	
Macroscopy	No harmful defect		No harmful defect		No harmful defect		No harmful defect	
Impact Strength in J/Sq.m at +20° C Min	10	-	-	-	-	-	-	-
Closure in mm (RS)	≥ 1		≥ 1		≥ 1		≥ 1	
Sampling Size	1 ≤ 500		1 ≤ 1000		1 ≤ 100		-	

**FORGED AXLES SPECIFICATION**

रासायनिक कॉपोज़िशन **CHEMICAL COMPOSITION %**

CHARACTERISTICS	IRS R-43/1992		IRS R-16/1995	
	Category A	Category B	Class B (Wagon)	
Carbon	0.40 - 0.55	0.22 - 0.29	0.37 Max	
Manganese	0.60 - 0.90	0.60 - 0.90	1.12 Max	
Silicon	0.15 Min	0.15 - 0.40	0.15 - 0.46	
Phosphorous	0.045 Max	0.035 Max	0.04 Max	
Sulphur	0.05 Max	0.04 Max	0.04 Max	
Chromium	-	0.90 - 1.20	0.30 Max	
Nickel	-	-	0.30 Max	
Copper	-	-	0.30 Max	
Molybdenum	-	-	0.05 Max	
Vanadium	-	-	0.07 Max	
Hydrogen ppm (Max)	2	2	3	
Nitrogen % (Max)	0.007	0.007	0.007	
यांत्रिक और मेटल्लोग्राफिक गुण	<b>MECHANICAL &amp; METALLOGRAPHIC PROPERTIES</b>			
CHARACTERISTICS	Wheel Seat	Wheel Seat	Normalised	N.Q.T
U.T.S Kg/mm <sup>2</sup>	570 - 685	650 - 800	550 - 650	550 - 700
Yield Strength	Not less than 50% UTS	400 Min	320 Min	
Elongation % (Min)	21-17	18	22	
Reduction in Area % Min	-	60	-	
Grain Size (ASTM)	6 - 8	6 - 8	Greater than 5	
Micro Structure	Fine Pearlite	Fine Pearlite	Fine Pearlite	
Macroscopy	Shall not reveal any harmful defects	Shall not reveal any harmful defects	Must not reveal any discontinuities	
Impact Strength in J/Sq.m at	N = 20 J ; NT = 35 J	NT = 40 J	25 J	40 J
Sampling Size	1 in each cast / heat	1 in each cast / heat	1 in each cast / heat or max. 100/batch	
Ultrasonic Testing	100%	100%	100%	
MPT	100%	100%	100%	

Category A	Motor driven DSL, Eled Loco, EMU Coaches & Rail Cars
Category B	Shaff Driven DSL, Hydraulic LOCO & Rail Cars
N.Q.T	Normalised, Quenched & Tempered