

Laboratory Control & Testing Laboratory, Diesel Locomotive Works, Varanasi,  
Uttar Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6729

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Validity 12.01.2018 to 11.01.2020

Last Amended on --

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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**CHEMICAL TESTING**

I.	METAL & ALLOYS			
1.	Steel (Low Alloys and Carbon Steel)	Carbon	IS 8811 ASTM E 415	0.01% to 1.50%
		Silicon	IS 8811 ASTM E 415P	0.05% to 1.40%
		Manganese	IS 8811 ASTM E 415	0.01% to 2.00%
		Phosphorus	IS 8811 ASTM E 415	0.005% to 0.088%
		Sulphur	IS 8811 ASTM E 415	0.005% to 0.069%
		Chromium	IS 8811 ASTM E 415	0.05% to 3.60%
		Molybdenum	IS 8811 ASTM E 415	0.01% to 1.10%
		Nickel	IS 8811 ASTM E 415	0.05% to 4.90%
		Aluminium	IS 8811 ASTM E 415	0.01% to 0.35%
		Copper	IS 8811 ASTM E 415	0.01% to 0.80%
		Vanadium	IS 8811 ASTM E 415	0.01% to 0.55%

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**MECHANICAL TESTING**

<b>I.</b>	<b>MECHANICAL PROPERTIES OF METALS</b>			
1.	<b>Metallic Materials</b>	Tensile Strength	ASTM A 370 ASTM E 8 IS 1608	20 kN to 100 kN
				40 kN to 250 kN
				100 kN to 500 kN
				200 kN to 1000 kN
		% Elongation		1% to 70%
		% Reduction in Area		10% to 80%
		Brinell Hardness	ASTM E 370 ASTM E 10	100 HBW to 450 HBW
		Rockwell Hardness		20 HRC to 65 HRC
		Charpy Impact	IS 1757 (Part 1)	2 J to 300 J
<b>II.</b>	<b>METALLOGRAPHY TEST</b>			
1.	<b>Steel and Cast Iron Specimen &amp; Component</b>	Metallographic Micro-Structural Analysis	ASM Handbook Volume 9 Metallography and Microstructures	Qualitative (Magnification: 50X to 1000X)