

Laboratory Rail Coach Factory, Metallurgical & Chemical Laboratory, Kapurthala, Punjab

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7716

Page 1 of 2

Validity 16.08.2018 to 15.08.2020

Last Amended on --

Sl.	Product / Material of Test	Specific Test Performed	Test Method / Standard against which tests are performed	Range of Testing / Limits of Detection
-----	----------------------------	-------------------------	--	--

CHEMICAL TESTING

I. METALS & ALLOYS				
1.	Plain Carbon Steel & Low Alloy Steel	Carbon	ASTM E 415	0.02 % to 1.50 %
		Silicon		0.01 % to 2.00 %
		Manganese		0.01 % to 2.50 %
		Phosphorus		0.005 % to 0.16 %
		Sulfur		0.01 % to 0.11 %
		Chromium		0.01 % to 5.00 %
		Nickel		0.01 % to 4.50 %
		Molybdenum		0.01 % to 3.00 %
		Copper		0.01 % to 4.00 %
		Vanadium		0.01 % to 2.50 %
		Aluminum		0.01 % to 0.80 %
		Titanium		0.01 % to 0.80 %
		Boron		0.0003 % to 0.01 %
		Cobalt		0.01 % to 1.00 %
Niobium	0.01 % to 1.60 %			
2.	Stainless Steel	Carbon	ASTM E 1086	0.01 % to 1.00 %
		Silicon		0.01 % to 2.50 %
		Manganese		0.01% to 2.50 %
		Phosphorus		0.005 % to 0.08 %
		Sulfur		0.01 % to 0.08 %
		Chromium		10.0 % to 26.0 %
		Nickel		1.00 % to 35.00 %
		Molybdenum		0.01 % to 5.00 %
		Copper		0.01 % to 2.80 %
		Titanium		0.01% to 0.80 %
		Vanadium		0.01 % to 0.70 %
		Cobalt		0.01 % to 0.40 %

Laboratory Rail Coach Factory, Metallurgical & Chemical Laboratory, Kapurthala, Punjab

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7716

Page 2 of 2

Validity 16.08.2018 to 15.08.2020

Last Amended on --

Sl.	Product / Material of Test	Specific Test Performed	Test Method / Standard against which tests are performed	Range of Testing / Limits of Detection
3.	Copper & Its Alloy	Tin	BS EN 15079	0.01 % to 16.0 %
		Lead		0.01 % to 3.8 %
		Zinc		0.01 % to 48.0 %
		Nickel		0.05 % to 6.5 %
		Phosphorus		0.01 % to 1.0 %
		Iron		0.01 % to 8.50 %
		Silicon		0.01 % to 1.4 %
		Manganese		0.01 % to 1.6 %
		Arsenic		0.01 % to 0.22 %
		Antimony		0.01 % to 0.40 %
		Aluminum		0.01 % to 13.00 %
		Magnesium		0.01 % to 0.30 %
		Chromium		0.01 % to 0.20 %
		Cobalt		0.01 % to 3.90 %
Beryllium	0.02 % to 0.9 %			
4.	Aluminum & Its Alloy	Copper	ASTM E 1251	0.01 % to 2.55 %
		Magnesium		0.001 % to 4.0 %
		Silicon		0.01 % to 19.0 %
		Iron		0.01 % to 2.0 %
		Manganese		0.01 % to 2.5 %
		Zinc		0.02 % to 4.0 %
		Lead		0.02 % to 0.6 %
		Tin		0.01 % to 0.06 %
		Titanium		0.01 % to 0.6 %
		Chromium		0.01 % to 0.35 %