

Laboratory Jindal Saw Limited (IPU) Laboratory, Village: Samaghogha, Taluka: Mundra, District: Kutch, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Discipline Chemical Testing **Issue Date** 15.06.2015

Certificate Number T-3475 **Valid Until** 14.06.2017

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	METALS AND ALLOYS			
1.	Ferrous Metal – Ductile Iron & Cast Iron	Carbon (C)	ASTM E 1999: 2011	2.7 % to 4.15 %
		Silicon (Si)		1.00 % to 3.0 %
		Manganese (Mn)		0.18 % to 1.4 %
		Phosphorous (P)		0.015 % to 0.160 %
		Sulphur (S)		0.0030 % to 0.110 %
		Magnesium (Mg)		0.010 % to 0.070 %
		Chromium (Cr)		0.025 % to 0.55 %
		Aluminum (Al)		0.007 % to 0.05 %
		Titanium (Ti)		0.004 % to 0.120 %
		Lead (Pb)	0.0035 % to 0.015 %	
		Antimony (Sb)	0.005 % to 0.065 %	
		Carbon (C)	ASTM E 1999: 2011	2.7 % to 4.15 %
		Silicon (Si)		1.00 % to 3.0 %
		Manganese (Mn)		0.18 % to 1.4 %
		Phosphorous (P)		0.015 % to 0.160 %
		Sulphur (S)		0.0030 % to 0.110 %
		Magnesium (Mg)		0.010 % to 0.070 %

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Ferrous Metal – Ductile Iron & Cast Iron	Chromium (Cr)	ASTM E 1999: 2011	0.025 % to 0.55 %
		Aluminum (Al)		0.007 % to 0.05 %
		Titanium (Ti)		0.004 % to 0.120 %
		Lead (Pb)		0.0035 % to 0.015 %
		Antimony (Sb)		0.005 % to 0.065 %
		Carbon (C)		2.7 % to 4.15 %
		Silicon (Si)		1.00 % to 3.0 %
		Manganese (Mn)		0.180 % to 1.4 %
		Phosphorous (P)		0.015 % to 0.160 %
		Sulphur (S)		0.0030 % to 0.110 %
		Magnesium (Mg)		0.010 % to 0.070 %
		Chromium (Cr)		0.025 % to 0.55 %
		Aluminum (Al)		0.007 % to 0.05 %
		Titanium (Ti)		0.004 % to 0.120 %
		Lead (Pb)		0.0035 % to 0.015 %
		Antimony (Sb)		0.005 % to 0.065 %

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2.	Ferrous Metal - Low Alloy Steel	Carbon (C)	ASTM E 415: 2008	0.06 % to 0.55 %
		Silicon (Si)		0.01 % to 0.35 %
		Manganese (Mn)		0.30 to 2.20
		Phosphorus (P)		0.006 to 0.03
		Sulphur (S)		0.003 to 0.030
		Chromium (Cr)		0.025 to 1.0
		Aluminium (Al)		0.002 to 0.05
		Titanium (Ti)		0.001 to 0.006
		Nickel (Ni)		0.015 to 0.5
		Molybdenum (Mo)		0.01 to 0.07
		Copper (Cu)		0.01 to 0.2
		Niobium (Nb)		0.002 to 0.05
		Vanadium (V)		0.008 to 0.15
		Calcium (Ca)		0.0005 to 0.003
		Boron (B)		0.0001 to 0.003
Nitrogen (N)	0.004 to 0.015			

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II. PLASTICS AND RESINS				
1.	Epoxy Powder Sample	Gel Time	CSA Z 245 20: 2010	5 s to 300 s
		Cure Time		30 s to 300 s
		Percentage of Cure		10 % to 100 %
		Moisture Content	CSA Z 245 20: 2010 Procedure A	0.5 % to 2 %
		Density	CSA Z 245 20: 2010 Procedure A	(0.5 g to 2 g)/Cm ³
		Thermal Characteristics	CSA Z 245 20: 2010	25 °C to 120 °C
		Glass Transition - Tg1		
		Glass Transition - Tg2		25 °C to 250 °C
2.	HDPE, PP , LDPE, MDPE, LLDPE, Molded Material Sample / Sheet	Heat of Reaction -Delta H (Enthalpy)		(20 J to 150 J)/g
		Oxidative Induction Time	ASTM D 3895: 2014	0 to 200 min
3.	Liquid Epoxy Coated Sample	24 hrs Water Absorption of Thermoplastics	ASTM D 570: 1998	0.001 % to 5 %
		Curing	ISO15741: 2001 Annexure F ISO 2812-1: 2007 Method A	No Softening wrinkling or Blistering (Visual)
		Pin hole	ISO15741: 2001 Annexure E API RP 5L2: 2002 (Appendix G)	1 to 5 Nos. (Visual)

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4.	Fusion Bonded Epoxy Coated Sample	Cathodic Disbondment Test	CSA Z 245 20: 2010 & NACE RP 0394: 2002 Appendix F	0.1 mm to 25 mm at Temp Upto 95°C
5.	3 Layer Polyethylene or Polypropylene Coated Sample	Cathodic Disbondment Test	CSA Z 245 21: 2010	0.1 mm to 40 mm at Temp Upto 95 °C

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