Laboratory	**Test-Well Laboratories,119-122/B, Rajratna Shopping Centre, National Highway, Odhav, Ahmedabad, Gujarat**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Certificate Number	**TC-8115** ***(in lieu of 1868, T-1869)***	**Page 1 of 4**	
Validity	**08.12.2018 to 07.12.2020**	**Last Amended on 28.03.2019**	

"In view of the transition deadline for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		CHEMICAL TESTING		
I.	**METALS & ALLOYS**			
1.	**Low Alloy Steel**	C	ASTM E 415-2017 IS 8811 (1998)	0.07% to 1.50%
		Si		0.05% to 2.00%
		Mn		0.04% to 1.85%
		P		0.01% to 0.06%
		S		0.01% to 0.15%
		Cr		0.23% to 3.33%
		Ni		0.10% to 3.30%
		Mo		0.07% to 0.91%
		Al		0.03% to 0.103%
		Cu		0.09% to 0.63%
		V		0.02% to 0.37%
		N		0.01% to 0.012%
2.	**Stainless Steel**	C	ASTM E 1086-2014	0.01%to 0.16%
		Si		0.05% to 1.55%
		Mn		0.04% to 1.87%
		P		0.006% to 0.122%
		S		0.002% to 0.031%
		Cr		5.00 %to 23.00%
		Ni		0.02% to 22.00%
		Mo		0.09 %to 3.33%
		Ti		0.40% to 1.28%
		Cu		0.02% to 2.32%
		N		0.02% to 0.050%
		Nb		0.20% to 0.290%

Sunita Rawat
Convenor

N. Venkateswaran
Program Manager

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Certificate Number	**TC-8115** ***(in lieu of 1868, T-1869)***	**Page 2 of 4**
Validity	**08.12.2018 to 07.12.2020**	**Last Amended on 28.03.2019**

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	**Copper &Copper Alloys**	Zn	WI/TWL/OES/04, Issue No.01, Issue date 01/09/2013	0.01% to 35.0%
		Pb		0.01% to 16.0%
		Sn		0.01% to 14.0%
		P		0.01% to 0.60%
		Mn		0.05% to 0.80%
		Fe		0.05% to 1.80%
		Ni		0.10% to 11.0%
		As		0.01% to 0.12%
		Sb		0.01% to 0.22%
		Bi		0.01% to 0.15%
		Al		0.05% to 1.00%
		S		0.02% to 0.07%
4.	**Aluminium & Aluminium Alloys**	Cr	ASTM E1251:2017a	0.05% to 0.28%
		Cu		0.35% to 2.80%
		Fe		0.25% to 0.85%
		Mg		0.20% to 1.00%
		Mn		0.15% to 0.65%
		Ni		0.15% to 1.10%
		Pb		0.05% to 0.40%
		Si		0.70% to 14.00%
		Sn		0.05% to 0.35%
		Ti		0.07% to 0.18%
		Zn		0.20% to 1.70%

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Certificate Number	**TC-8115** ***(in lieu of 1868, T-1869)***	**Page 3 of 4**
Validity	**08.12.2018 to 07.12.2020**	**Last Amended on 28.03.2019**

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		MECHANICAL TESTING		
I.	**MECHANICAL PROPERTIES OF METALS**			
1.	**Ferrous/Non Ferrous Metals (Sections, Plate, Sheets, bar, Tube, Pipe machined from products)**	**Tensile Strength** -Yield Strength -0.2% Proof Strength -% Elongation -% Reduction in area	IS1608:2018, ASTM A370:2017a ASTM E8/E8M:2016a SA370 ASME-IIA: 2017	20 kN to 600 kN Load 1% to 80 % 5% to 95 %
2.	**Ferrous & Nonferrous Material and Product**	Brinell Hardness	IS1500-1- 2013 ASTM E10-2017	32 HBW to 200 HBW 5/250
		Rockwell Hardness	IS1586 -1: 2018 ASTM E18-2017e1	30 HRBW to 100 HRBW 20 HRC to 70 HRC
3.	**Weld in Metals**	Tensile Strength	ASME Sec IX-2017 QW150	20 kN to 600 kN Load
		Bend Test (Face bend, Root Bend, Side bend)	ASTM A370-2017a SA37O ASME-IIA:2017 IS 1599:2012 ASME Sec IX-2017 QW-160, 161,162.	Qualitative [Mandrel dia (mm) 6,8,10,12,14,16,18,20,22,24,26,28,30,32,36, 40 & 44]
4.	**HSD Bar / TMT Bar**	Bend Test	IS 1599-2012 IS1786:2008 Amd1, 2012	Qualitative [Mandrel dia (mm) 6,8,10,12,14,16,18,20,22,24,26,28,30,32,36, 40 & 44]
		Rebend Test	IS1786:2008 Amd1, 2012	
5.	**Ferrous Tubes/pipes**	Flattening & Flaring	IS2328-2005, ASTM,A1016-2018, SA1016, ASME-IIA-2017 ASTM,A999-2018, SA999, ASME-IIA-2017	Qualitative 10 mm to 200 mm (Outer Dia.)

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Certificate Number	**TC-8115** ***(in lieu of 1868, T-1869)***	**Page 4 of 4**
Validity	**08.12.2018 to 07.12.2020**	**Last Amended on 28.03.2019**

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		Flaring	ASTM A1016-2018, SA1016, ASME-IIA-2017 ASTM A450-2018 SA450 ASME-IIA-2017	Qualitative 10mm to 100mm(Outer Dia.) Cone angle 60 deg.
		Reverse Bend	ASTM A530-2018 SA530, ASME-IIA-2017	Qualitative 10mm to 100mm (Outer Dia.)
6.	**Nut**	Proof Load	IS1367 Part6-94 (RA 2004) ASTM A194-2017a SA194, ASME-IIA-2017	Qualitative (Size M8, 10,12,14, 16,20,24,27 and 30)Coarse Thread.
II.	**METALLOGRAPHIC TESTS**			
1.	**Austenitic Stainless steel**	Grain Size	ASTM E112-2013 (Comparison Method)	Grain size ASTM No.1 to 8 at 100X Twinned grain ASTM Plate II
2.	**Austenitic Stainless steel and Cast Iron**	Micro Structure	ASM Atlas of Microstructures ASM Hand Book Volume 9	Qualitative
3.	**Ferrous Metals weldment**	Macro etch Test	ASME Section IX-2017, QW183 & QW184	Qualitative
4.	**Cast Iron (FG and SG Iron)**	Type Size Distribution	IS 7754-1975,RA2005 & ASTM A247-2017	Qualitative
		Nodularity Nodule count	ASTM A247-2017	Qualitative
5.	**Austenitic Stainless steel**	Intergranular Corrosion Tests	ASTM A262-2015 Practice- A, B, C & E	Qualitative

Sunita Rawat
Convenor

N. Venkateswaran
Program Manager