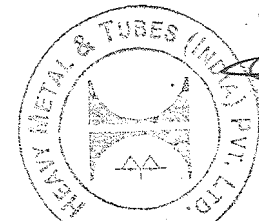


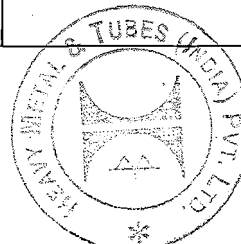
Heavy Metal & Tubes (India) Pvt Ltd

Quality Assurance Plan for Stainless Steel Welded Straight Tubes

Sr.No	Operation	Quality Characteristics Checked	Reference Standard	Instrument used	Testing Carried Out	Type of record keeping	Remark	Responsibility
1	2	3	4	5	6	7	8	9
1	Coil	[A] Dimensions	As per Applicable Standard	With & Thickness Checking	HMTIPL	Format	Random Checking of Dimensions	Q.C.Dept.
1.1		[B] Surface		Visual	HMTIPL		Random Checking of surface inspection	Q.C.Dept.
1.2		[C] Chemical Analysis	As per Applicable Standard & P.O.Requirements	Spectro metre	HMTIPL	Format	Chemical analysis results compared with ladle analysis as per applicable standard(One Sample / Heat)	Q.C.Dept.
2	Tube Forming & Welding	Welding Parameters	As per internal Procedure		HMTIPL		Random checking of Physicl testing .	Q.C.Dept.
3	Intermediate drawing (If Applicable)	Visual & Dimension	As per Applicable Standard & P.O.Requirements	OD & Thickness	HMTIPL			
4	Digressing		As per internal Procedure	Lab	HMTIPL		Random Checking once in a day	Chemist
5	Heat treatment [Bright Annaling]	(A) Temperature	As per Applicable Standard & P.O.Requirements	Automatic Temp. controller	HMTIPL	Format	As per Applicable Specification & P.O.Requirements.	Production & Q.C. Department
5.1		(B) Speed & Feed	Depends on tubes thk & size of tube		HMTIPL	Format	Speed & Feed checking for maintaining soaking time (Depends on OD & Thk of the tubes)	Production & Q.C. Department



5.2		© Hardness	As per Applicable Standard & P.O.Requirments	Rckwell Supperfical Hardness Tester & Rockwell Hardness Tester	HMTIPL	Format	Random Checking	Production & Q.C. Department
6	Straightening	A) Dimensions	As per Applicable Standard & P.O.Requirement	Micrometer .	HMTIPL	Format	Random Checking as per applicable standard	Production & Q.C. Department
6.1		B) Surface		Visual			Random checking for straightening marks,dents & any other mechanical damages which are visible in straightening condition	Production & Q.C. Department
7	End Cutting	Length checking	P.O.Requirement	Mesuringtap	HMTIPL	Format	Random checking	Production dept
8	Air Under Water test [If Applicable]	NDT	10Kg/sq.cm	Air Under Testing	HMTIPL	±	100%	Q.C.Dept
9	Eddy Current [If Applicable]	Non Destructive testing	ASTM-A-450/ E-426 & P.O	Eddy current testing machine	HMTIPL	Format	100%	Q.C.Dept
10	Ultrasonic test [if applicable]	Non Destructive testing	ASTM E-213 & P.O	Ultrasonic testing machine	HMTIPL	Format	100%	Q.C.Dept
11	Mechanical testing	A) Tensile test	As per Applicable standard & P.O	Tensile testing Machine	HMTIPL	Format	Tensile test carried out random as per standard	Q.C.Dept
11.1		B)Hardness	As per Applicable Standard & P.O	Rckwell Supperfical Hardness Tester & Rockwell Hardness Tester	HMTIPL	Format	Random Checking as per applicable standard	Q.C.Dept.
11.2		C) Flaring & Flattening	As per applicable Standard & P.O	Tensile testing Machine	HMTIPL	Format	Testing conducted as per standard	Q.C.Dept
11.3		D) IGC & Micro [If Applicable]	As per Applicable Standard & P.O.Requirement		HMTL & At out side approved lab as demand		As per Applicable Specification & P.O.Requirments.	Q.C.Dept



[Handwritten signature]

11.4		Residual Stress	As Per Procedure		HMTIPL	Format	As per Applicable Specification & P.O.Requirments.	Q.C.Dept
12	Chemical	Product Analysis	As per Applicable Standerd & P.O.Requirement	Spectro metre	HMTIPL	Format	As per Applicable Specification & P.O.Requirments.	Q.C.Dept
13	End Cutting	Length checking	P.O.Requirement	Mesuringtap	HMTIPL	Format	Random checking	Product on dept
14	Hydrotesting	Test Pressure	As per Applicable Standerd & P.O.Requirement	Hydrotesting	HMTIPL	Format/Register	100% Checking by keeping of pressure for minimum of 5 seconds	Production & Q.C. Department
15	Final Cutting	A) Dimensions	As per Applicable Standard & P.O.Requirments	Micrometre & Mesuringtap	HMTIPL	Format	Random Checking as per applicable standard	Production & Q.C. Department
16	Final Inspection	A) Dimensions	As per applicable Standard & P.O	Micrometre, Vernier, Measuringtap.	HMTIPL	Format/Register	100 % Checking	Q.C Dept
16.1		B) Surface			HMTIPL	Format/Register	100% Visual Inspection	Q.C.Dept
17	Marking	For Identification			HMTIPL		Manufacturer trade mark, OD, Thk, Length, Spec., Grade, Heat No and as Specified by	Q.C.Dept
18	Packing	Soundnes of packing	As per P.O		HMTIPL	Formet	As Per P.O	Despatch

