

Heavy Metal & Tubes Ltd

Quality Assurance Plan for Stainless Steel Seamless Tubes/Pipes

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	Seamless Mother Hollows	[A] Dimension	As per Applicable Standard	Micrometer[for OD & Thickness Checking] & Measuring tap	HMTL	Format	Random Checking of Dimensions	Q.C.Dept.
		[B] Surface		Visual	HMTL		Random Checking of surface inspection	Q.C.Dept.
		[C] Chemical Analysis	As per Applicable Standard & P.O.Requirements		HMTL	Format	Chemical analysis results compared with ladle analysis as per applicable standard(Random Checking)	Q.C.Dept.
		(D) Colour Coding	As per internal std		HMTL		100% Colour Coding done as per international std. for differanc grade	Raw material dept.
2	Intermediate Heat treatment	(A) Temperature	As per Applicable Standard & P.O.Requirements	Automatic Temp. controller	HMTL	Format	As per Applicable Specification & P.O.Requirements.	Production & Q.C. Department
		(B) Speed & Feed	Depends on tubes thk & size of tube		HMTL	Format	Speed & Feed checking for maintaining soaking time (Depends on OD & Thk of the tubes)	Production & Q.C. Department
3	Intermediate Straightening	A) Dimensions	As per Applicable Standard & P.O.Requirement	Micrometer & Measuring Tap.	HMTL	Format	Random Checking as per applicable standard	Production & Q.C. Department
4	Intermediate Pickling	HF% & HNO3%		Lab	HMTL	Format	Random Checking once in a day	Chemist
5	Coating	Acidity		Lab	HMTL	Format	Random Checking once in a day	Chemist
6	Soap Bath	% Fatty Acid & PH Value		Lab	HMTL	Format	Random Checking once in a day	Chemist



7	Drawing	A) Dimensions	As per Applicable Standard & P.O.Requirement	OD & Thickness Micrometer	HMTL	Format	Random Dimensions & Length Checking as per applicable Standards & P.O Requirement	Q.C.Dept & Production Dept
		B) Surface		Visual	HMTL		Random Checking for straightning marks, dent & any other mechanical damages which are visible in sraightning	Q.C.Dept & Production Dept
8	Heat Treatment	(A) Temperature	As per Applicable Standard & P.O.Requirments	Automatic Temp. controller	HMTL	Format	As per Applicable Specification & P.O.Requirements.	Production & Q.C. Department
		(B) Speed & Feed	Depends on tubes thk & size of tube		HMTL	Format	Speed & Feed checking for maintaining soaking time (Depends on OD & Thk of the tubes)	Production & Q.C. Department
		© Hardness	As per Applicable Standard & P.O.Requirements	Rckwell Supperical Hardness Tester & Rockwell Hardness Tester	HMTL	Format	Random Checking	Production & Q.C. Department
9	Pickling	HF% & HNO3%		Lab	HMTL	Format	Random Checking once in a day	Chemist
10	Straightening	A) Dimensions	As per Applicable Standard & P.O.Requirements	Micrometer & Measuringtap.	HMTL	Format	Random Checking as per applicable standard	Production & Q.C. Department
		B) Surface		Visual	HMTL		Random checking for straightening mark,dent & any other mechanical damages which are visible in straightening condition	Production & Q.C. Department
11	End Cutting	Length cutting	P.O.Requirement	Mesuringtap	HMTL	Format	Random checking	Production dept
12	Hydro testing	Test Pressure	As per Applicable Standard & P.O.Requirement	Hydro testing	HMTL	Format/Register	100% Checking by keeping of pressure for minimum of 5 seconds	Production & Q.C. Department
13	Eddy Current [If Applicable]	Non Destructive testing	ASTM-A-450/E-309 & P.O	Eddy current testing machine	HMTL	Format	100%	Q.C.Dept
14	Ultrasonic test [if applicable]	Non Destructive testing	ASTME-213 & P.O	Ultrasonic testing machine	HMTL	Format	100%	Q.C.Dept
15	Mechanical testing	A) Tensile test	As per Applicable standard & P.O	Tensile testing Machine	HMTL	Format	Tensile test carried out random as per standard	Q.C.Dept



