

Shreeji Engineers Consultants

Forms / Formats, Issue No.1, Rev.00.

Title: IQC Plan for Critical Purchased / Out Sourced Items

Raw Material / Out Sourced Items	Parameters to be Checked	Specification	Tolerances	Instruments Used
PLATES / CIRCLES	Thickness	(ASME SEC II A)		
(Stainless Steel / Carbon Steel)	SS Cold Rolled Coils	As per Client Specification / P. O.	SA 480 TABLE A2.17	Vernier Caliper
	SS Hot Rolled Coils		SA 480 TABLE A2.5	
	SA 515		SA 20 TABLE A2.1	
	SA 516			
	IS 2062			
	Chemical Composition			OUTSOURCED
	SA 515	SA 515 TBL 1	SA 20	
	SA 516	SA 516 TBL 1		
	SA 240 SS 304 / 316 / 202	SA 240 TABLE 1	SA 480 TABLE AI.1	
	IS 2062	IS 2062 - AMEND. NO. 1		
	Physical Analysis			
	Tensile Testing			
	SA 515	SA 515 TBL 2	SA 370 TBL A8.1	OUTSOURCED
	SA 516	SA 516 TBL 2		
	SA 240 SS 304 / 316 / 202			
	IS 2062	IS 2062 - AMEND. NO. 1 TBL 2		
	Hardness Testing			
	SA 515	SA 370 TBL A8.1		OUTSOURCED
	SA 516			
	SA 240 SS 304 / 316 / 202			
	Bend Test (Only for CS)			
NOTE:				
Standard under tolerance for thickness of plates for all grades in Stainless Steel is 0.25 mm or 10% whichever is lower.				
Standard under tolerance for thickness of plates for all grades in Carbon Steel is 0.3 mm or 10% whichever is lower.				

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PIPES	Outside Diameter			
(Seamless & ERW)	SA 312 SS 304 / 316 / 202	ANSI B 36.19	SA 999 TBL 1	Vernier Caliper
	SA 106		IS 1239 TABLE 3, 4, 5	
	IS 1239		IS 3589 TABLE 6	
	IS 3589			
	Thickness			
	SA 312 SS 304 / 316 / 202	As per Client Specification / P. O.	SA 312 TBL 3	Screw Gauge
	SA 106		SA 106 TABLE X2.1	
	IS 1239		IS 1239 TABLE 3, 4, 5	
	IS 3589		IS 3589 SEC 12.3.2	
	Chemical Composition			
	SA 312 SS 304 / 316 / 202	SA 312 TBL 3		OUTSOURCED
	SA 106	SA 106 TABLE 1		
	IS 1239	IS 1239 TABLE 1	IS 1239 TABLE 2	
	IS 3589	IS 3589 TABLE 2	IS 3589 TABLE 3	
	Physical Analysis			
	Tensile Testing			
	SA 312 SS 304 / 316 / 202	SA 312 TBL 4	SA 370 TBL A8.1	OUTSOURCED
	SA 106	SA 106 TABLE 2, 3		
	IS 1239	IS 1239 SEC. 14		
	IS 3589	IS 3589 TABLE 4		
	Hardness Testing			
	SA 312 SS 304 / 316 / 202	SA 370 TBL A8.1		OUTSOURCED
	Bending / Flattening Tests			
	SA 106 GR. B	SA 106 SEC 11, 12		OUTSOURCED
	IS 1239	IS 1239 SEC 14		
	IS 3589	IS 3589 SEC 9		

NOTE:

Standard under tolerance for thickness of pipes for all grades in Stainless Steel & Carbon Steel is 12.5%.

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TUBES	Outside Diameter			
(Seamless)	SA 213 SS 304 / 316 / 202	As per Client Specification / P. O.	SA 450 TABLE 3	Vernier Caliper
	SA 179			
	Thickness			
	SA 213 SS 304 / 316 / 202	As per Client Specification / P. O.	SA 450 TABLE 2	Vernier Caliper
	SA 179			
	Chemical Composition			
	SA 213 SS 304 / 316 / 202	SA 213 TABLE 1		OUTSOURCED
	SA 179	SA 179 SEC. 8		
	Physical Analysis			
	Tensile Testing			
	SA 213 SS 304 / 316 / 202	SA 213 TABLE 5	SA 370 TBL A8.1	OUTSOURCED
	SA 179	SA 179 NOTE: 1		
	Hardness Testing			
	SA 179	SA 179 SEC. 10		
	Flaring	SA 450 TABLE 5		
NOTE:				
Standard under tolerance for Outside Diameter of tubes for all grades in Stainless Steel & Carbon Steel is 0 mm upto 2" OD & 5.6 mm thk.				

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Raw Material / Out Sourced Items	Parameters to be Checked	Specification	Tolerances	Instruments Used
RODS / SHAFTS	Chemical Composition			
	SA 479 SS 304 / 316 / 202	SA 479 TABLE 1	SA 484 TABLE 1	OUTSOURCED
	Physical Analysis			
	Tensile Testing		SA 370 TBL A8.1	OUTSOURCED
	SA 479 SS 304 / 316 / 202	SA 479 TABLE 2		
	Hardness Testing			
SA 479 SS 304 / 316 / 202	SA 370 TBL A8.1			
FLANGES	Size & Thickness			
	SA 105	ANSI B 16.5		Vernier Caliper
	SA 182			
	SA 240			
	SA 516			
	Chemical Composition			
	SA 105	SA 105 TABLE 1	SA 105 TABLE 2	OUTSOURCED
	SA 182	SA 182 TABLE 2	SA 182 TABLE 4	
	Physical Analysis			
	Tensile Testing		SA 370 TBL A8.1	OUTSOURCED
	SA 105	SA 105 TABLE 3		
	SA 182	SA 182 TABLE 3		
Hardness Testing				
SA 105	SA 105 TABLE 3			
SA 182	SA 182 TABLE 3			

Title: IQC Plan for Critical Purchased Out Sourced Items

Raw Material / Out Sourced Items	Parameters to be Checked	Specification	Tolerances	Instruments Used	Responsibility	Name of Quality Record
MOTOR						
	Flameproof / Non-Flp	As per Client Specification / Purchase Order	BRANDED PRODUCTS As per Company Catalogue & Relevent Standards	Visual		
	Foot / Flange Mounting			Vernier Caliper		
	Rated Power			Visual		
	RPM					
	Gas Group Type					
GEARBOX						
	Inline Helical / Worm Type /	As per Client Specification / Purchase Order	BRANDED PRODUCTS As per Company Catalogue & Relevent Standards	Visual		
	Foot / Flange Mounting			Vernier Caliper		
	Rated Power			Visual		
	RPM					
	Output / Input Side Flange Dimensions				Vernier Caliper	
PUMP						
	Type of Pump Monoblock or Otherwise etc.	As per Client Specification / Purchase Order	BRANDED PRODUCTS As per Company Catalogue & Relevent Standards	Visual		
	Foot / Flange Mounting					
	Rated Power					
	RPM					
	Output / Input Side Flange Dimensions			Vernier Caliper		

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Raw Material / Out Sourced Items	Parameters to be Checked	Specification	Tolerances	Instruments Used
WELDING ELECTRODES / FILLER WIRES		ASME SEC II C		
	WIRE / ELECTRODE SIZE			Test Certificate Provided
	E 6013	SFA 5.1 TBL 7		
	E 7018			
	E 308	SFA 5.4 TBL 6	SFA 5.4 TBL 6	
	ER 308L	SFA 5.9 TBL 2	SFA 5.9 TBL 2	
	ER 316L			
	ER 70S-2	SFA 5.18 TBL 8	SFA 5.18 TBL 8	Test Certificate Provided
	ER 71T-1	SFA 5.20 TBL 9	SFA 5.20 TBL 9	
	ER 71T-5			
	Chemical Composition			
	E 6013	SFA 5.1 TBL 7		Test Certificate Provided
	E 7018			
	E 308	SFA 5.4 TBL 1		OUTSOURCED
	ER 308L	SFA 5.9 TBL 1		
	ER 316L			
	ER 70S-2	SFA 5.18 TBL 1		Test Certificate Provided
	ER 71T-1	SFA 5.20 TBL 6		
	ER 71T-5			
	Physical Analysis			
	Tensile Requirements, Yield Strength Requirements & % Elongation			
	E 6013	SFA 5.1 TBL 2		Test Certificate Provided
	E 7018			
	E 308	SFA 5.4 TBL 5		
	ER 70S-2	SFA 5.18 TBL 3		
	ER 71T-1	SFA 5.20 TBL 1		
	ER 71T-5			
NUTS & BOLTS	Chemical Composition			
	IS 1367	PART 6, TABLE 4		
	SA 193	SA 193 TABLE 1		
	Mechanical Properties			
	IS 1367	PART 6, TABLE 5		
	SA 193	SA 193 TABLE 2		
	Nut Dimensions			
	IS 1367	PART 6, TABLE A.3		

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Raw Material / Out Sourced Items	Parameters to be Checked	Specification	Tolerances	Instruments Used	Responsibility	Name of Quality Record
NUTS & BOLTS	Chemical Composition					
	IS 1367	PART 6, TABLE 4 /				
	IS 1364					
	Mechanical Properties					
		PART 6, TABLE 5 /				
	Nut Dimensions					
	IS 1367	PART 6, TABLE A.3 /				
	IS 1364					



Raw Material / Out Sourced Items	Parameters to be Checked	Specification	Tolerances	Instruments Used
TUBESHEET DRILLING				
	Tube Diameter	As per Drawing	Minus 0.1 mm up to 25.4 OD	Vernier Caliper
	Tube Pitch		±0.1 mm	
	Tube Cleaning Lane			
	Groove for Tube Expansion			
	No. of Grooves		0	Visual
	Width of Grooves		±0.1 mm	Internal Dial Verniner
	Depth of Grooves		±0.05 mm	
	Tie Rod / PCD Holes			
	No. of Holes		0	Visual
	Hole Diameter		±0.5 mm	Vernier Caliper
	Pass Partition Groove	±0.5 mm		
TUBESHEET MACHINING				
	Outside Diameter	Dimensions as per Drawing	± 1 mm	Vernier Caliper
	Shell Side Pipe Groove			
	Tube Side Step OD			
	Tube Side Step Depth			
MACHINING				
	Outside / Inside Diameter	Dimensions as per Drawing	± 1 mm	Measuring Tape / Vernier Caliper
	RF Step ID / OD			
	RF Step - Depth			
	PCD Marking			
DISH FORMING				
	Circumference	As per Drawing	±5 mm of Shell Circumference	Measuring Tape
	Knuckle Radius		+1.25%, -0.625% of Inside Diameter of Shell No -ve Tolerance for Knuckle Radius	Template
	Crown Radius			
	Straight Face Length		±5 mm	Measuring Tape
	Thickness			
	Crown		10% of Nominal Thickness	Ultrasonic D - Meter
	Knuckle			
	Straight Face			