

**SPECIFICATION FOR  
STAINLESS STEEL VESSEL PLATE  
FOR  
LIGO VACUUM EQUIPMENT**

Hanford, Washington  
and  
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Information contained in this specification and its attachments is proprietary in nature and shall be kept confidential. It shall be used only as required to respond to the specification requirements, and shall not be disclosed to any other party.

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REV LTR.	BY-DATE	APPD. DATE	DESCRIPTION OF CHANGE

<b>PROCESS SYSTEMS INTERNATIONAL, INC.</b>				<b>SPECIFICATION</b>	
INITIAL APPROVALS	PREPARED	DATE	APPROVED	DATE	Number <b>V049-2-041</b>
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**SPECIFICATION FOR STAINLESS STEEL VESSEL PLATE**

**1.0 SCOPE**

This specification covers the minimum technical requirements for the materials, fabrication, inspection, testing, preparation for shipping, shipment and delivery of the plate to be used for manufacturing ultra high vacuum boundary equipment.

All attachments are incorporated herein by reference and made a part of this specification.

Information contained in this specification and its attachments is proprietary in nature and shall be kept confidential. It shall be used only as required to respond to the specification requirements, and shall not be disclosed to any other party.

**2.0 MATERIAL REQUIREMENTS**

2.1 This material shall conform to the requirements of ASME Specification SA-240 Type 304/304L with the additional supplementary requirements described in this specification. The material is to be dual certified to meet the material grade of 304 and 304L.

2.2 Applicable Codes

2.2.1 ASME Boiler & Pressure Vessel Code, Section II, "Materials", the 1992 Edition with the 1994 Addenda.

2.2.2 ASTM A-480, "Standard Specification for General Requirements for Flat-Roll Stainless and Heat-Resisting Steel Plate, Sheet, and Strip".

2.2.3 ASTM A-700, "Standard Packages for Packaging, marking, and Loading Methods for Steel Products for Domestic Shipment".

2.3 Any apparent conflicts between the requirements given herein and the applicable ASME Specification shall be brought to the attention of PSI for clarification.

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**3.0 MANUFACTURE****3.1 Thickness Tolerance**

The material shall be furnished in the thickness(es) specified in the purchase order. The thickness tolerance shall meet ASTM A-480 requirements.

**3.2 Width and Length Tolerance**

The plate material shall be cut to the minimim size specified in the purchase order. The width and length plus tolerance of the finished material shall not exceed the tolerances specified in ASME SA-480 specification, the minus tolerance is 0.0 in..

**3.3 Surface Finish**

Hot rolled, Annealed, and Pickled (HRAP) mill finish is acceptable.

**3.4 Chemistry and Mechanical Properties**

The material shall meet the chemistry requirements as specified in SA 240 Type 304L, and the mechanical requirement of SA240 Type 304 material specification.

**3.4.1 The material shall be dual certified as type 304/304L.****3.5 After final cleaning and pickling, no grinding with abrasive wheels, cloth or stones is permitted. No iron, carbon steel or other contaminants (such as grease, oil hydrocarbons) to come in contact with the plate.****3.6 Cleanliness**

This material is intended for use in a high vacuum application. Potential hydrocarbon contamination shall be eliminated. Also, the material shall be wrapped and covered at all times the material is not being processed to minimize possible exposure to contaminants. The plate shall be cleaned prior to shipment.

**4.0 MATERIAL TESTING****4.1 A 2" wide coupon, the width of one plate is to be supplied for each heat number supplied. The coupon must be pickled the same as the plate.****5.0 INSPECTION/WITNESS****5.1 The purchaser shall have the right to witness all manufacturing processes.****SPECIFICATION**

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**6.0 REJECTIONS AND REPAIR OF DEFECTS**

6.1 No weld splices or repair welding is permitted to the material.

**7.0 IDENTIFICATION**

7.1 Identification of the material shall be maintained through all manufacturing processes.

7.2 If material identity is lost, the plate shall be requalified by making all tests that were required for the material or as indicated in this specification.

7.3 Marking the finished materials with marking fluids, die stamps, and/or electro-etching is not permitted. A vibratory tool with a minimum tip radius of .005" is acceptable for marking one side only of the finished plate. All other marking methods must be approved by the purchaser prior to use. All plates shall be marked 6" in from both edges in one corner. When stacked for shipment, all markings shall be in the same corner for easy identification upon receipt at PSI. The minimum marking is to be the heat/lot number.

**8.0 DOCUMENTATION**

8.1 The Certified Material Test Report (CMTR) shall be provided to the purchaser a minimum of 48 hours prior to shipment of the material.

8.2 A record of the material thickness for each group of materials is required. Thickness shall be measured and recorded at both edges and the center of the plates.

**9.0 PACKAGING, STORING AND SHIPPING**

9.1 The material shall be packaged for shipment as described in ASTM A700-94, Section 11.3.3 and Figure 56 (wrapped package on skids) with the additional supplementary requirements as described herein.

9.2 The plate material shall be wrapped in waterproof polyethylene and covered with a tarp immediately after all steel processing operations have been completed to minimize contamination. The material shall remain packaged and covered until it is necessary to remove the covering and packaging material for further processing.

9.2 The material shall be shipped as specified in the purchase order.

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**10.0 NON-ESCORT PRIVILEGES AND INSPECTION RIGHT**

Non-escort privileges for Buyer, Owner, Government and Owner representatives to all areas of the facilities where the work is being performed shall be arranged. This will include access to all areas where material is being processed and stored.

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ATTACHMENT "A"  
LIGO QUALITY ASSURANCE REQUIREMENTS SUMMARY

LIGO VACUUM EQUIPMENT	VENDOR: V59049					JOB NO.: V59049
EQUIPMENT: Vacuum Vessel Plate	VENDOR ENG. OFFICE:					DWG. NO.:
PSI P.O. NO:	VENDOR FACTORY:					SPECNO: V049-2-041
TESTING INSPECTION AND DOCUMENTATION RECORD	Submittal After P.O.	Witnessed by PSI	Approval by PSI	Copies Req'd for PSI Files	Record in Mfr's File	Remarks:
						Inspector:  Date:
MILESTONE SCHEDULE			X	2	X	
VENDOR Q.A. PLAN			X	2	X	
CLEANING PROCEDURE			X	2	X	
PREP FOR SHIPMENT PROCEDURE			X	2	X	
WELDING PROCEDURES						
ASSEMBLY DRAWINGS						
DESIGN REVIEW						
CERTIFIED MATERIAL TEST REPORTS			X	2	X	
IN-PROCESS INSPECTIONS		X		2	X	
OPERATION & MAINTENANCE MANUALS						
SHOP TEST PLAN						
SHOP TEST (WITH REPORT)						
SHOP DIMENSIONAL INSPECTION		X		2	X	

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