

SECTION 1 - GENERAL

- I 1.1 This practice covers the design, fabrication and inspection of brazed aluminum type heat exchangers.
- I 1.2 **An asterisk (*)** indicates that a decision by the Purchaser is required or that additional information shall be furnished by the Purchaser.
- I ↗ 1.3 **Table 1** lists the practices and standard which shall be used with this practice.

TABLE 1

PRACTICES	
IP 3-18-1	Piping Fabrication
IP 5-1-1	Pressure Vessels
IP 18-12-1	Positive Materials Identification
STANDARD	
ALPEMA	
The Standards of the Brazed Aluminum Plate-Fin Heat Exchanger Manufacturers' Association	

- I ↗ * 1.4 **Table 2** lists practices which shall be used with this practice if specified by the Purchaser.

TABLE 2

PRACTICES	
IP 18-7-1	Welding Procedures
IP 19-1-1	Paint and Protective Coatings

SECTION 2 - VENDOR'S PROPOSAL

- I ↗ 2.1 With the Proposal, Vendor shall submit the following information:
 - a. Completed Specification Sheet (ALPEMA **Figure 7-3** or equivalent).
 - b. An outline drawing showing the number of units per exchanger service, manifolding arrangement, nozzle sizes and location, and overall dimensions and supports.
 - c. The time required to provide approval drawings, time allowed for Purchaser's approval, and the time required to provide final certified drawings. All times shall be given in days from date of verbal or written notification of the purchase order and shall allow for a specified transmittal time.
 - d. The shipping date, specified as number of weeks after placement of the purchase order, either verbal or written.
 - e. A detailed description of exceptions to Purchaser's Inquiry.
 - f. Details of proprietary weld type transition components. The term "weld type transition component" is any constituent where dissimilar metals are joined by means other than bolting, such as brazing.

SECTION 3 - VENDOR'S INFORMATION FOR PURCHASER'S REVIEW

- I ↗ 3.1 In addition to ALPEMA requirements, the following information shall be submitted for the Purchaser's review by the time specified in **Par. 2.1c**, and shall consist of but not be limited to the following:
 - a. Welding procedures and qualifications.
 - b. Mechanical calculations.
 - c. Identification: Service, Purchaser's item number, project name and location, Purchaser's order number, and vendor's shop order number.
 - d. Test methods of proprietary weld type transition components.

IP 6-3-1		Brazed Aluminum Heat Exchangers	
Page 2 of 3			
Rev. 1	March 1998		

(This practice is appropriate for attachment to Inquiry or Purchase Document)

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SECTION 4 - FINAL RECORDS

- I ♦ 4.1 Vendor must furnish to the Purchaser four copies of all documents specified in **Par. 3.1** as well as completed Attachment 1 or its equivalent, with the stamp "**AS-BUILT**."

SECTION 5 - MATERIALS

- R 5.1 Nozzles smaller than 12 in. (300 mm) shall be manufactured from seamless pipe.

SECTION 6 - DESIGN

- R 6.1 The maximum allowable working pressure rating shall be established per the proof test procedures of the **ASME Code Section VIII, Division 1**, or a recognized Code of another nation if approved by the Purchaser.
- R 6.2 All welded joints, including dissimilar material welds, shall be full penetration.
- R 6.3 Proprietary weld-type transition components between stainless steel and aluminum may be used only if it has been established, by either destructive testing, analytical or numeric methods of assessment, that they are equivalent in pressure, bending and fatigue strengths to the weaker of the pipe materials being joined.

SECTION 7 - INSPECTION AND TESTING

- R ♦ 7.1 Welded bimetal transition pieces, such as stainless steel to aluminum joints, shall be tested prior to installation as follows:
- a. Hydrostatic test at 200 percent of design pressure.
 - b. Pneumatic test with nitrogen at 125 percent of design pressure.
 - * c. When a Helium test is specified for the completed unit, the transition piece shall be thermally shocked per the following procedure:
 - 1. Immersed in and brought to the temperature of warm water.
 - 2. Immersed in liquid nitrogen.
 - 3. Re-immersed in warm water.
- R ♦ *7.2 When Helium tests are specified, the techniques of measurement and sensitivity of the test shall be according to ALPEMA Par. 5.6.2.2 or as agreed upon by the Owner's Engineer and Vendor prior to fabrication.
- O,R 7.3 Leaking passages shall not be blocked without the Purchaser's approval.
- O *7.4 Per Purchaser's request, a pressure drop air test shall be conducted for verification of proper flow distribution in the passes.

Revision Memo

9/68
1/72
1/76

12/94
3/98

Original Issue of Basic Practice
Revision 1
Revision 2

Revision 0 - Original Issue of International Practice
Revision 1

Editorial revision to rationalize and convert this practice to supplement the ALPEMA Standard.

Par. 1.4 added reference to ALPEMA. **Par. 1.5** deleted **IP 18-1-1** (withdrawn). **Par. 4.1** revised since **Appendix 1** of **Revision 0** deleted. Revised **Pars. 7.1 and 7.2** to eliminate Halogen as alternative test media for Helium. Paragraphs deleted from **IP 6-3-1, Revision 0**, because they are now covered in the ALPEMA Standard: **3.2, 5.1, 5.2, 5.3, 7.2, 7.3, 8.2, 8.3, 8.5, 8.6, 9.1, 9.2, 9.3, 9.4, Attachment 1**.

Paragraphs revised from **IP 6-3-1, Revision 0**, because the material is now covered by the ALPEMA Standard: **3.1, 7.1, 8.4**.

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