

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: October 29, 1999

*See Numeric Index for expiration
and any reaffirmation dates.*

**Case 2239-1
Use of Permanent Mold Cast Aluminum Alloys
UNS A13560 and A03570
Section VIII, Division 1**

Inquiry: May aluminum alloys UNS A13560 and A03570 in the overaged temper meeting the chemical composition and mechanical properties given in Tables 1 and 2 and other requirements of SB-108 be used in Section VIII, Division 1 construction?

Reply: It is the opinion of the Committee that aluminum alloys UNS A13560 and A03570 as described in the

above Inquiry may be used in Section VIII, Division 1 construction of pressure vessels, up to 300°F under the following conditions:

- (a) The maximum allowable stress values for the materials shall be those given in Table 3.
- (b) Welding is not permitted.
- (c) External pressure applications are not permitted.
- (d) Applicable parts of Section VIII, Division 1 that shall apply are those given in Part UNF.
- (e) The castings shall be heat treated. The heat treatment shall be 980°F for 8 hours, followed by a water quench, then 440°F for 7.5 hours.
- (f) This Case number shall be shown on the data report and the marking of the material.

**TABLE 1
CHEMICAL COMPOSITION**

UNS	Al	Si	Fe	Cu	Mn	Mg	Zn	Ti	Other Elements	
									Each	Total
A13560	Remainder	6.5–7.5	0.20	0.20	0.10	0.25–0.45	0.10	0.20	0.05	0.15
A03570	Remainder	6.5–7.5	0.15	0.05	0.03	0.45–0.65	0.05	0.20	0.05	0.15

GENERAL NOTE: When single units are shown, these amounts indicate the maximum permitted.

**TABLE 2
MECHANICAL PROPERTIES**

Temper	Tensile Strength, min., ksi	Yield Strength (0.2% Offset), min., ksi	Elongation in 2 in. or 4 Diameters, min., %	UNS
Overaged	26	19	4.0	A13560
Overaged	27	20	4.0	A03570

**TABLE 3
MAXIMUM ALLOWABLE STRESS VALUES**

Temperature, °F	ksi (A13560) [Note (1)]	ksi (A03570) [Note (1)]
100	7.4	7.7
200	6.9	7.4
300	6.4	6.5

NOTE:

(1) The revised criterion of 3.5 on tensile strength was used in establishing these values.

