Designation: A 608 – 91a (Reapproved 1998)

An American National Standard

Standard Specification for Centrifugally Cast Iron-Chromium-Nickel High-Alloy Tubing for Pressure Application at High Temperatures[1]

This standard is issued under the fixed designation A 608; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers iron-chromium-nickel, high-alloy tubes made by the centrifugal casting process intended for use under pressure at high temperatures.

1.2 The grades of high alloys detailed in Table 1 are intended for applications requiring strength and resistance to corrosion and scaling at high temperatures.

1.3 Optional Supplementary Requirements S1 to S11 are provided; these call for additional tests to be made if desired.

1.4 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 *ASTM Standards:*

A 342 Test Methods for Permeability of Feebly Magnetic Materials[2]

A 488/A488M Practice for Steel Castings, Welding, Qualification of Procedures and Personnel[3]

A 530/A530M Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe[4]

E 8 Test Methods of Tension Testing of Metallic Materials[5]

E 21 Test Methods for Elevated-Temperature Tension Tests of Metallic Materials[5]

E 94 Guide for Radiographic Testing[6]

E 139 Practice for Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials[5]

E 142 Method for Controlling Quality of Radiographic Testing[6]

E 151 Practice for Tension Tests of Metallic Materials at Elevated Temperatures with Rapid Heating and Conventional or Rapid Strain Rates[5]

E 165 Test Method for Liquid Penetrant Examination[6]

3. Ordering Information

3.1 Orders for material to this specification should include the following, as required, to describe the desired material adequately:

3.1.1 Quantity (feet, centimetres, or number of lengths),

3.1.2 Name of material (centrifugally cast tubing),

3.1.3 Specification number and grade (Table 1),

3.1.4 Size (outside or inside diameter and minimum wall thickness, see Section 8).

3.1.5 Condition (see Section9, as cast or as cast with machining on outside or inside surfaces, or machined; see 5.1, 8, and 9),

3.1.6 Length (specific or random), (Permissible Variations in Length Section of Specification A 530/A 530M),

3.1.7 End finish (Ends Section of Specification A 530/A 530M),

3.1.8 Optional requirements (see 8.2.3 regarding the manufacturer's wall thickness allowance for as cast tubing and Supplementary Requirements S1 to S11),

3.1.9 Test report required (see Section 13), and

3.1.10 Special requirements to be added to the specification.

4. General Requirements

4.1 Material furnished under this specification shall conform to the applicable requirements of the current edition of Specification A 530/A 530M, unless otherwise provided herein.

5. Materials and Manufacture

5.1 The tubing may be supplied in the as cast condition or as cast with machining on the outside or inside surfaces, or machined, as agreed upon between the manufacturer and the purchaser.

5.2 Heat treatment of the tubing shall not be required under this specification.

6. Chemical Requirements

6.1 The material shall conform to the requirements as to chemical composition as prescribed in Table 1.

7. Tensile Properties

7.1 Tension tests at room temperature are not recommended

[1] This specification is under the jurisdiction of ASTM Committee A-1 on Steel, Stainless Steel, and Related Alloys, and is the direct responsibility of Subcommittee A01.18 on Castings.

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[2] *Annual Book of ASTM Standards*, Vol 03.04.

[3] *Annual Book of ASTM Standards*, Vol 01.02.

[4] *Annual Book of ASTM Standards*, Vol 01.01.

[5] *Annual Book of ASTM Standards*, Vol 03.01.

[6] *Annual Book of ASTM Standards*, Vol 03.03.

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