



# Standard Specification for UNS N08367 Welded Tube<sup>1</sup>

This standard is issued under the fixed designation B676; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers UNS N08367<sup>2</sup> welded tube for general corrosion applications.

1.2 This specification covers outside diameter and nominal wall tube.

1.2.1 The tube sizes covered by this specification are  $\frac{1}{8}$  to 5 in. (3.2 to 127 mm) in outside diameter and 0.015 to 0.320 in. (0.38 to 8.13 mm), inclusive, in wall thickness.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet (MSDS) for this product/material as provided by the manufacturer; to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>3</sup>

[A1016/A1016M Specification for General Requirements for Ferritic Alloy Steel, Austenitic Alloy Steel, and Stainless Steel Tubes](#)

[B751 Specification for General Requirements for Nickel and Nickel Alloy Welded Tube](#)

[B899 Terminology Relating to Non-ferrous Metals and Alloys](#)

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.07 on Refined Nickel and Cobalt and Their Alloys.

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<sup>2</sup> New designation established in accordance with Practice E527 and SAE J1086, Practice for Numbering Metals and Alloys (UNS).

<sup>3</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

## 3. Terminology

3.1 Terms defined in Terminology B899 shall apply unless otherwise defined in this standard.

## 4. General Requirement

4.1 Material furnished in accordance with this specification shall conform to the applicable requirements of Specification B751 unless otherwise provided herein.

## 5. Classification

5.1 *Class 1*—Welded, cold worked, solution treated, and each piece of each lot subjected to one of the following four tests: hydrostatic, pneumatic (air underwater), eddy current, or ultrasonic.

5.2 *Class 2*—Welded, cold worked, solution treated, and each piece of each lot leak tested (hydrostatic or pneumatic) plus electric tested (eddy current or ultrasonic).

## 6. Ordering Information

6.1 It is the responsibility of the purchaser to specify all requirements that are necessary for material ordered under this specification. Examples of such requirements include, but are not limited to, the following:

6.1.1 Alloy name or UNS number,

6.1.2 ASTM designation and year of issue,

6.1.3 Dimensions:

6.1.3.1 Outside diameter and nominal wall thicknesses,

NOTE 1—Tube produced to outside diameter and minimum wall thickness may be furnished upon agreement between the manufacturer and the purchaser.

6.1.3.2 Length (specific or random),

6.1.4 Class (Section 5),

6.1.5 Quantity (feet or number of pieces),

6.1.6 *Certification*—State if certification is required,

6.1.7 *Samples for Product (Check) Analysis*—State whether samples for product (check) analysis should be furnished, and

6.1.8 *Purchaser Inspection*—If the purchaser wishes to witness tests or inspection of material at the place of manufacture, the purchase order must so state indicating which tests or inspections are to be witnessed.

## 7. Material and Manufacture

7.1 Tube shall be made from flat-rolled alloy by an automatic welding process with no addition of filler metal. Subsequent to welding and prior to final solution treatment Class 1 and Class 2 material shall be cold worked either in both weld and base metal or in weld metal only.

NOTE 2—The recommended heat treatment shall consist of heating to a minimum temperature of 2025°F (1105°C) for Type N08367 and quenching in water or rapidly cooling by other means.

7.2 Tube shall be furnished with oxide removed. When solution treatment is performed in a protective atmosphere descaling is not necessary.

## 8. Chemical Composition

8.1 The material shall conform to the requirements as to chemical composition prescribed in Table 1. One test is required for each lot as defined in Specification B751.

8.2 If a product (check) analysis is performed by the purchaser, the material shall conform to the product (check) analysis variations specified in Specification B751.

**TABLE 1 Chemical Requirements**

Element	Composition Limits, %
	N08367
Carbon	0.030 max
Manganese	2.00 max
Silicon	1.00 max
Phosphorus	0.040 max
Sulfur	0.030 max
Chromium	20.00 to 22.00
Nickel	23.50 to 25.50
Molybdenum	6.00 to 7.00
Nitrogen	0.18 to 0.25
Iron <sup>A</sup>	remainder
Copper	0.75 max

<sup>A</sup> Iron shall be determined arithmetically by difference.

## 9. Mechanical Properties and Other Requirements

9.1 *Mechanical Properties*—The material shall conform to the mechanical properties prescribed in Table 2. One test is required for each lot as defined in Specification B751.

9.2 *Flattening Test Requirements:*

9.2.1 One flattening test per lot shall be performed in accordance with Specification B751.

9.3 *Flange Test Requirements:*

9.3.1 Flange test specimens shall show no cracking or flaws.

9.3.2 For tube less than 0.093 in. (2.36 mm) in inside diameter and tube having a wall thickness equal to or greater than the inside diameter, the flange test shall not be required.

9.4 *Reverse-Bend Requirements:*

9.4.1 One reverse-bend test as defined in Specification A1016/A1016M shall be performed on each lot of tubing.

9.4.2 Reverse-bend test specimens shall show no evidence of cracks or lack of penetration in the weld, or of overlaps resulting from the reduction in thickness of the weld areas by cold working.

9.4.3 The reverse-bend test is not applicable when the specified wall is 10 % or more of the specified outside diameter, or the wall thickness is 0.134 in. (3.4 mm) or greater, or the outside diameter size is less than 0.375 in. (9.5 mm). Under these conditions the reverse flattening test of Specification A1016/A1016M shall apply.

9.4.4 The lot definition for the reverse-bend test shall be 1500 ft (450 m) of finished tubing.

9.5 *Nondestructive Test Requirements:*

9.5.1 Tube shall be subjected to a pressure test or nondestructive electric test in accordance with Specification B751.

## 10. Keywords

10.1 UNS N08367; welded tube

**TABLE 2 Mechanical Properties**

Type	Condition (Temper)	Gage	Tensile Strength, min, ksi (MPa)	Yield Strength, 0.2 % Offset, min, ksi (MPa)	Elongation in 2 in. or 50 mm (or 4 <i>D</i> ), min, %
N08367	Solution treated (Class 1 and Class 2)	≤9/16	100 (690)	45 (310)	30
		>9/16	95 (655)	45 (310)	30

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