Designation: ~~B75/B75M – 11~~ B75/B75M – 19

Standard Specification for Seamless Copper Tube[1]

This standard is issued under the fixed designation B75/B75M; 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 U.S. Department of Defense.

1. Scope*

1.1 This specification[2] establishes the requirements for seamless round, rectangular, and square copper tube suitable for general engineering applications.

1.1.1 Tubes made from any of the following Copper UNS No. designations shall be supplied unless otherwise specified in the contract or purchase order:

Copper UNS No.	Type of Copper
C10100	Oxygen-free electronic
C10200	Oxygen-free without residual deoxidants
C10300	Oxygen-free, extra low phosphorus
C10800	Oxygen-free, low phosphorus
C12000	Phosphorus deoxidized, low residual phosphorus
C12200	Phosphorus deoxidized, high residual phosphorus

1.2 *Units*—The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, SI units are shown in brackets. The values stated in each system ~~may~~are not ~~be~~necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the ~~other. Combining~~other, and values from the two systems ~~may result in non-conformance with the standard.~~shall not be combined.

1.3 The following safety hazard ~~statement~~caveat pertains only to the test methods described in ~~Sections 20.5.2.1, 21.2.9, and 21.2.10 of~~ this specification: *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 establish appropriate ~~safety~~ safety, health, and ~~health~~environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[3]

B153 Test Method for Expansion (Pin Test) of Copper and Copper-Alloy Pipe and Tubing

B170 Specification for Oxygen-Free Electrolytic Copper—Refinery Shapes

B193 Test Method for Resistivity of Electrical Conductor Materials

~~B251~~B251/B251M Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube ~~(Metric) B0251_B0251M~~

~~B251M Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube (Metric) (Withdrawn 2017)[4]~~

B577 Test Methods for Detection of Cuprous Oxide (Hydrogen Embrittlement Susceptibility) in Copper

B601 Classification for Temper Designations for Copper and Copper Alloys—Wrought and Cast

[1] This specification is under the jurisdiction of ASTM Committee B05 on Copper and Copper Alloys and is the direct responsibility of Subcommittee B05.04 on Pipe and Tube.

Current edition approved ~~Oct. 15, 2011~~April 1, 2019. Published ~~November 2011~~May 2019. Originally published as B75 – 28T. Last previous edition approved in ~~2010~~2011 as ~~B75 – 02 (2010).~~B75/B75M–11. DOI: ~~10.1520/B0075_B0075M-11.~~10.1520/B0075_B0075M–19.

[2] For *ASME Boiler and Pressure Vessel Code* applications, refer to related Specification SB-75 in Section II of that Code.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the ~~standard's~~standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

B846 Terminology for Copper and Copper Alloys
E3 Guide for Preparation of Metallographic Specimens
E8/E8M Test Methods for Tension Testing of Metallic Materials
E18 Test Methods for Rockwell Hardness of Metallic Materials
E53 Test Method for Determination of Copper in Unalloyed Copper by Gravimetry
E62 Test Methods for Chemical Analysis of Copper and Copper Alloys (Photometric Methods) (Withdrawn 2010)[4]
E112 Test Methods for Determining Average Grain Size
E243 Practice for Electromagnetic (Eddy Current) Examination of Copper and Copper-Alloy Tubes
E255 Practice for Sampling Copper and Copper Alloys for the Determination of Chemical Composition
E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

2.2 *ASME Standard:*[5]
ASME Boiler and Pressure Vessel Code

3. General Requirements

3.1 The following sections of Specification B251B251/B251M or B251Mare a part of this specification.
3.1.1 Terminology, General,General;
3.1.2 Material and Manufacture,Manufacture;
3.1.3 Workmanship, Finish, and Appearance,Appearance;
3.1.4 Significance of Numerical Limits,Limits;
3.1.5 Inspection,Inspection;
3.1.6 Rejection and Rehearing,Rehearing;
3.1.7 Certification,Certification;
3.1.8 Mill Test Reports,Reports;
3.1.9 Packaging and Package Marking,Marking; and
3.1.10 Supplementary RequirementsRequirements.

3.2 In addition, when a section with an identical title to those referenced in section 3.1 appears in this specification, and is in conflict with the section appearing in Specification B251B251/B251M or B251M, the section in this specification shall prevail.

4. Terminology

4.1 *Definitions*—For definitions of terms related to copper and copper alloys, refer to Terminology B846.

5. Ordering Information

5.1 Include the following information in orders for products.specific choices when placing orders for product under this specification, as applicable.
5.1.1 ASTM designation and year of issue (for example, B75 – 02),);
5.1.2 Copper UNS No. (for example, C10100),C10100);
5.1.3 Temper (Section 8),);
5.1.4 Dimensions; diameter or distance between parallel surfaces, and wall thickness (Section 17),);
5.1.5 How furnished; coils or straight lengths,lengths;
5.1.6 Number of pieces or footage; each size and type,type;
5.1.7 Total weight,weight.

5.2 The following options are available and shall be but may not be included unless specified at the time of placing the order, when required:
5.2.1 Electrical mass resistivity test,
5.2.2 Hydrogen embrittlement test,
5.2.3 Hydrostatic test for pressures less than or equal to 1000 psi (21.2.921.2.8),
5.2.4 Hydrostatic test for pressures over 1000 psi (21.2.9.121.2.8.1),
5.2.5 Pneumatic test,
5.2.6 Certification, and
5.2.7 Test report. Mill test report,
5.2.8 Expansion Testtest,
5.2.9 When product is purchased for ASME Boiler and Pressure Vessel Code application, and
5.2.10 When product is purchased for agencies of the U.S. Government.

[4] The last approved version of this historical standard is referenced on www.astm.org.
[5] Refer to PracticeAvailable from American E527 for explanation of unified numbering system (UNS).Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, http://www.asme.org.

6. Material and Manufacture

6.1 *Material*—The material of manufacture shall be billets, bars, or tube of Copper UNS No. C10100, C10200, C10300, C10800, C12000, or C12200, and shall be of such soundness as to be suitable for processing into the tubular products described.

6.2 ~~*Manufacture*—~~*Manufacture:* ~~The tube shall be manufactured by such hot- and cold-working processes as to produce a homogeneous, uniform wrought structure in the finished product. It shall be cold drawn to the finished size and wall thickness. When cold-drawn temper is required, the final drawing operation shall be such as to meet the specified temper. When annealed temper is required, the tube shall be annealed subsequent to the final cold draw.~~

6.2.1 The tube shall be manufactured by such hot- and cold-working processes as to produce a uniform wrought structure in the finished product. It shall be cold drawn to the finished size and wall thickness.

6.2.2 When cold-drawn temper is required, the final drawing operation shall be such as to meet the specified temper. When annealed temper is required, the tube shall be annealed subsequent to the final cold draw.

7. Chemical Composition

7.1 The material shall conform to the requirements in Table 1 for the specified Copper UNS No. designation.

7.1.1 These ~~specification~~composition limits do not preclude the presence of other elements. ~~When included in the contract or purchase order, and agreed upon by the~~ By agreement between the manufacturer or supplier and the purchaser, limits ~~shall~~may be established and analysis required for unnamed elements.

8. Temper

8.1 The requirements and size availability of tube in the cold-drawn tempers H55, H58, and H80, as defined in Classification B601, are specified in Table 2 or Table 3.

8.1.1 Rectangular, including square, tube shall normally be supplied only in H58 temper. When requested by the manufacturer or supplier, and upon agreement with the purchaser, tube ~~shall~~may be supplied in H55 ~~or H58~~ temper.

8.1.1.1 For any combination of diameter and wall thickness not listed under H80 temper, the requirements specified for H58 temper shall apply.

8.2 The requirements and size availability of tube in the annealed tempers ~~O50~~ O50, O60, and ~~O60,~~O62 as defined in Classification B601, are specified in Table 2 or Table 3.

NOTE 1—The purchaser shall confer with the manufacturer or supplier for the availability of product in a specific temper.
NOTE 2—Refer to Appendix X1 for recommended applications based on temper.

9. Grain Size Requirements

9.1 Tube in the annealed temper shall conform to the grain size specified in Table 2 or Table 3.

9.2 Acceptance or rejection based upon grain size shall depend only on the average grain size of a test specimen taken from each of two sample portions, and each specimen shall be within the limits prescribed in Table 2 or Table 3 when determined in accordance with Test Methods E112.

10. Physical Property Requirements

10.1 *Electrical Resistivity*—When specified in the contract or purchase order, tube ordered for electrical conductor application produced from Copper UNS No. C10100, C10200, C10300, or C12000 shall have an electrical mass resistivity, $\Omega \cdot g/m^2$, not to exceed the following limit for the specified copper and temper when tested in accordance with Test Method B193:

Temper	Copper UNS No.			
	C10100	C10200	C10300	C12000
O60, O50	0.151 76	0.153 28	0.156 14	0.170 31
H55, H58, H80	0.156 14	0.157 37	0.159 40	0.174 18

TABLE 1 Chemical Requirements

Element	Composition, %					
	Copper UNS No.					
	C10100[A]	C10200[B]	C10300	C10800	C12000	C12200
~~Copper[C], min~~	~~99.99~~	~~99.95~~	~~...~~	~~...~~	~~99.90~~	~~99.9~~
Copper, min	99.99	99.95	...	...	99.90	99.9
~~Copper[C] + phosphorus, min~~	~~...~~	~~...~~	~~99.95~~	~~99.95~~	~~...~~	~~...~~
Copper + phosphorus, min	...	...	99.95	99.95	...	...
Phosphorus	...	...	0.001–0.005	0.005–0.012	0.004–0.012	0.015–0.040

[A] Refer to Table 1, Chemical Requirements, Grade 1, of Specification B170 for impurity limits for Copper UNS No. C10100.
[B] Refer to Table 1, Chemical Requirements, Grade 2, of Specification B170 for impurity limits for Copper UNS No. C10200.
[C] ~~Copper (including silver).~~

TABLE 2 Mechanical Property Requirements of Drawn-Temper and Annealed-Temper Tube (inch-pound values)

Temper Designation		Outside Diameter, or Major Distance Between Outside Parallel Surfaces, in.	Wall Thickness, in.	Rockwell Hardness[A]		Average Grain Size, mm	Tensile Strength, ksi[AB]	Yield Strength,[BC] min., ksi[AB]
Code	Name			Scale	Hardness			
~~H55~~	~~light-drawn[C]~~	~~all~~	~~all~~	~~30T[D]~~	~~30 to 60~~		~~36–47~~	~~30~~
H55	light-drawn[D]	all	all	30T	30 to 60		36–47	30
~~H58~~	~~drawn (general purpose)~~	~~all~~	~~all~~	~~30T[D]~~	~~30 min~~		~~36 min~~	~~30~~
H58	drawn (general purpose)	all	all	30T	30 min		36 min	30
~~H80~~	~~hard-drawn[C]~~	~~up to 4~~	~~0.020 to 0.250, incl~~	~~30T[D]~~	~~55 min~~		~~45 min~~	~~40~~
H80	hard-drawn[D]	up to 4	0.020 to 0.250, incl	30T	55 min		45 min	40
O62	heavy anneal	all	0.015 to 0.035	15T[E]	60 max	0.050 max	30 min	6.5[F, G]
			0.035 and over	F[E]	55 max	0.050 max	30 min	6.5[F, G]
~~O60~~	~~soft anneal~~	~~all~~	~~0.015 to 0.035~~	~~15T[E]~~	~~60 max~~	~~0.040 min~~	~~30 min~~	~~9[F,G]~~
O60	soft anneal	all	0.015 to 0.035	15T	60 max	0.040 min	30 min	9
			~~0.035 and over~~	~~F[E]~~	~~50 max~~	~~0.040 min~~	~~30 min~~	~~9[F,G]~~
			0.035 and over	F	50 max	0.040 min	30 min	9
~~O50~~	~~light anneal~~	~~all~~	~~0.015 to 0.035~~	~~15T[E]~~	~~65 max~~	~~0.040 max~~	~~30 min~~	~~9[F,G]~~
O50	light anneal	all	0.015 to 0.035	15T	65 max	0.040 max	30 min	9
			~~0.035 and over~~	~~F[E]~~	~~55 max~~	~~0.040 max~~	~~30 min~~	~~9[F,G]~~
			0.035 and over	F	55 max	0.040 max	30 min	9

~~[A] ksi = 1000 psi.~~
~~[B] Yield strength to be determined at 0.5 % extension under load.~~
~~[C] Light-drawn and hard-drawn tempers are normally available in round tubes only.~~
[A] Rockwell hardness ~~values shall apply only to tubes having a wall thickness of 0.020 in. or over, to round tubes having an inside diameter of 5/16 in. or over, and to rectangular including square tubes having an inside major distance between parallel surfaces of 3/16 in. or over. Rockwell hardness~~ tests shall be made on the inside surface of the tube. When suitable equipment is not available for determining the specified Rockwell hardness, other Rockwell scales and values shall be specified subject to agreement between the purchaser and supplier.
[B] ksi = 1000 psi.
[C] Yield strength to be determined at 0.5 % extension under load.
[D] Light-drawn and hard-drawn tempers are normally available in round tubes only.
[E] Rockwell hardness values shall apply only to tubes having a wall thickness of 0.015 in. or over, to round tubes having an inside diameter of 5/16 ~~in.~~ in. or over, and to rectangular, including square, tubes having an inside major distance between parallel surfaces of 3/16 in. or over. For all other tube, no Rockwell values shall apply. Rockwell hardness tests shall be made on the inside surface of the tube. When suitable equipment is not available for determining the specified Rockwell hardness, other Rockwell scales and values shall be specified subject to agreement between the purchaser and supplier.
[F] Light-straightening operation is acceptable.
[G] Alternative Tensile and Yield values to those listed in Table 2 are acceptable upon agreement between the purchaser and supplier.

NOTE 3—Refer to Appendix X2 for the International Annealed Copper Standard (IACS) electrical conductivity equivalents.

11. Mechanical Property Requirements

11.1 *Tensile and Yield Strength Requirements:*

11.1.1 The tube furnished under this specification shall conform to the requirements of Table 2 or Table 3 for the specified temper and wall ~~thickness.~~thickness when tested in accordance with Test Methods E8/E8M.

11.1.2 For any combination of diameter and wall thickness not listed under H80, the requirements for H58 shall apply.

11.1.3 Alternative Tensile and Yield values to those listed in Table 2 or Table 3 are acceptable upon agreement between the purchaser and supplier.

11.2 *Rockwell Hardness ~~Requirements :~~ Requirements:*

11.2.1 The tube shall conform to the Rockwell hardness requirements of Table 2 or Table 3 for the specified temper and wall ~~thickness.~~thickness when tested in accordance with Test Methods E18.

11.2.1.1 The Rockwell Hardness values for tube in the H55, H58, and H80 temper shall apply only to the following:

(a) Tubes having a wall thickness of 0.020 in. [0.508 mm] and over,

(b) Round tubes having an inside diameter of 5/16 in. [8.0 mm] and over,

(c) Rectangular and square tubes having major distances between parallel surfaces of 3/16 in. [5 mm] and over.

11.2.1.2 The Rockwell Hardness values for tube in the O60 and O50 temper shall apply only to the following:

(a) Tubes having a wall thickness of 0.015 in. ~~[0.40~~[0.38 mm] and over;

(b) Round tubes having an inside diameter of 5/16 in. [8 mm] and over;

(c) Rectangular and square tubes having inside major distances between parallel surfaces of 3/16 in. [5 mm] and over.

TABLE 3 Mechanical Property Requirements of Drawn-Temper and Annealed-Temper Tube (SI Values)

Temper Designation		Outside Diameter, or Major Distance Between Outside Parallel Surfaces, mm	Wall Thickness, mm	Rockwell Hardness		Average Grain Size, mm	Tensile Strength,[A] MPa	Yield Strength,[A] min, MPa
Standard	Former			Scale	Hardness			
H55	light-drawn[B]	all	all	30T[C]	30 to 60		250–325	205
H58	drawn (general purpose)	all	all	30T[C]	30 min		250 min	205
H80	hard-drawn[B]	up to 102	0.508 to 6.35, incl	30T[C]	55 min		310 min	275
O60	soft anneal	all	0.381 to 0.889	15T[D]	60 max	0.040 min	205 min	62[E,F]
			0.889 and over	F[D]	50 max	0.040 min	205 min	62[E,F]
O50	light anneal	all	0.381 to 0.889	15T[D]	65 max	0.040 max	205 min	62[E,F]
			0.889 and over	F[D]	55 max	0.040 max	205 min	62[E,F]

TABLE 3 Mechanical Property Requirements of Drawn-Temper and Annealed-Temper Tube (SI Values)

Temper Designation		Outside Diameter, or Major Distance Between Outside Parallel Surfaces, mm	Wall Thickness, mm	Rockwell Hardness[A]		Average Grain Size, mm	Tensile Strength,[B] MPa	Yield Strength,[B] min, MPa
Standard	Former			Scale	Hardness			
H55	light-drawn[C]	all	all	30T	30 to 60		250–325	205
H58	drawn (general purpose)	all	all	30T	30 min		250 min	205
H80	hard-drawn[C]	up to 102	0.508 to 6.35, incl	30T	55 min		310 min	275
O62	heavy anneal	all	0.381 to 0.889	15T[D]	60 max	0.050 max	205 min	45[E,F]
			0.889 and over	F[D]	55 max	0.050 max	205 min	45[E,F]
O60	soft anneal	all	0.381 to 0.889	15T	60 max	0.040 min	205 min	62
			0.889 and over	F	50 max	0.040 min	205 min	62
O50	light anneal	all	0.381 to 0.889	15T	65 max	0.040 max	205 min	62
			0.889 and over	F	55 max	0.040 max	205 min	62

[A] Yield strength to be determined at 0.5 % extension under load.

[B] Light-drawn and hard-drawn tempers are normally available in round tubes only.

[A] Rockwell hardness values shall apply only to tubes having a wall thickness of 0.508 mm or over, to round tubes having an inside diameter of 8.0 mm or over, and to rectangular including square tubes having an inside major distance between parallel surfaces of 5.0 mm or over. Rockwell hardness tests shall be made on the inside surface of the tube. When suitable equipment is not available for determining the specified Rockwell hardness, other Rockwell scales and values shall be specified subject to agreement between the purchaser and supplier.

[B] Yield strength to be determined at 0.5 % extension under load.

[C] Light-drawn and hard-drawn tempers are normally available in round tubes only.

[D] Rockwell hardness values shall apply only to tubes having a wall thickness of 0.400.040 mm or over, to round tubes having an inside diameter of 8.0 or over, and to rectangular, including square, tubes having an inside major distance between parallel surfaces of 5.0 mm or over. For all other tube, no Rockwell values shall apply. Rockwell hardness tests shall be made on the inside surface of the tube. When suitable equipment is not available for determining the specified Rockwell hardness, other Rockwell scales and values shall be specified subject to agreement between the purchaser and supplier.

[E] Light-straightening operation shall be permitted.

[F] Alternative Tensile and Yield values to those listed in Table 3 are acceptable upon agreement between the purchaser and supplier.

11.3 *Straightening*—It shall not be prohibited to use light straightening for tube in the O60 and O50 temper.

11.4 When a discrepancy between tensile and Rockwell hardness exists, tensile always takes precedence for acceptance or rejection criteria.

12. Performance Requirements

12.1 *Expansion Test for Round ~~Tube~~—Tube:* ~~When specified in the contract or purchase order, annealed tubes shall be capable of withstanding an expansion of the outside diameter of 40 % for tube ¾ in. [19.0 mm] and under and 30 % for tube over ¾ in. [19.0 mm]. The tube shall show no cracking or rupture visible to the unaided eye.~~

12.1.1 When specified in the contract or purchase order, annealed tubes shall be capable of withstanding an expansion of the outside diameter of 40 % for tube ¾ in. [19.0 mm] and under and 30 % for tube over ¾ in. [19.0 mm] when tested in accordance with Test Method B153.

12.1.2 The expanded tube shall show no cracking or rupture visible to the unaided eye.

13. Microscopical Examination ~~v~~

13.1 Tubes furnished in Copper UNS No. C10100, C10200, C10300, and C12000 shall be essentially free of cuprous oxide as determined by Procedure A of Test ~~Method~~Methods B577.

14. Hydrogen Embrittlement

14.1 When specified in the contract or purchase order, tubes produced in all designated copper material shall be capable of conforming to the requirements of Procedure B of Test ~~Method~~Methods B577.

~~15. Purchases for U.S. Government Agencies~~

~~15.1 When the contract or purchase order stipulates the purchase is for an agency of the U.S. Government, the tubes furnished shall conform to the conditions specified in the Supplementary Requirements of Specification B251 or B251M.~~

15. Nondestructive Test

15.1 The tubes shall be tested in ~~the~~ drawn tempers or as drawn before the final-annealed temper unless otherwise agreed upon between the manufacturer and the purchaser.

15.2 *Electromagnetic (Eddy-Current) Test:*

15.2.1 Each tube up to and including 3⅛ in. [79 mm] in outside diameter shall be subjected to test.

15.2.2 When tested in accordance with Practice E243, tubes which do not actuate the signaling device of the testing unit shall be considered as conforming to the requirements of the test.

15.3 *Hydrostatic Pressure Test*—When specified in the contract or purchase order, each tube shall be capable of withstanding an internal hydrostatic pressure sufficient to produce a fiber stress of 6000 psi [41 MPa] without leakage. The tube need not be subjected to a pressure ~~gage~~gauge reading over 1000 psi [6.9 MPa] unless specifically stipulated in the contract or purchase order.

15.4 *Pneumatic Pressure Test*—When specified in the contract or purchase order, each tube shall be capable of withstanding an internal air pressure of 60 psi [400 kPa], minimum, for 5 s without leakage.

16. Purchases for U.S. Government Agencies

16.1 When the contract or purchase order stipulates that the purchase is for an agency of the U.S. Government, the tubes furnished shall conform to the conditions specified in the Supplementary Requirements of Specification B251/B251M.

17. Dimensions, Mass, and Permissible Variations

17.1 The dimensions and tolerances for product ~~furnished to~~described by this specification shall be as specified in the following tables and related sections of the current edition of Specification ~~B251~~B251/B251M ~~or B251M~~:

17.1.1 *Wall Thickness Tolerances*—Refer to Tables 1 and 2.

17.1.2 *Tolerances for Diameter or Distance Between Parallel Surfaces*—Refer to Tables 3 and 4.

17.1.3 *Length Tolerances*—Refer to Tables 5 and 6.

17.1.4 *Straightness Tolerance*—Refer to Table 7.

17.1.5 *Corner Radius for ~~Rectangular Including Square~~Rectangular, including Square, Tube*—Refer to Table 8.

17.1.6 *Roundness, Squareness of Cut and Twist Tolerances for Rectangular and Square Tubes*—Refer to titled sections.

17.2 *Length Tolerances for Tube in Coils*—Refer to Table 4, Table 5, Table 6, Table 7, Table 8 and Table 9 of this specification.

18. Sampling

18.1 The lot size, portion size, and selection of sample portions shall be as follows:

18.1.1 *Lot Size*—An inspection lot shall be 10 000 ~~lbs~~lb [5000 kg] or fraction thereof,

18.1.2 *Portion Size*—Sample pieces shall be selected to be represented of the lot as follows:

Number of Pieces in Lot	Number of Portions to Be Taken[A]
1 to 50	1
51 to 200	2
201 to 1500	3

[A] Each test portion shall be taken from a separate tube.

18.2 *Chemical Composition:*

TABLE 4 Coil Length Tolerances (Specific Lengths) Inch-Pound Values

Outside Diameter or Major Distance Between Parallel Surfaces, in.	Tolerances, in., All Plus, for Nominal Lengths, ft	
	Up to 50, incl	Over 50 to 100, incl
Up to 2, incl	12	24