



Standard Specification for Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial¹

This standard is issued under the fixed designation A 569/A 569M; 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 hot-rolled carbon commercial steel (CS) sheet and strip, in coils and cut lengths, having a maximum carbon of 0.15 %. This material is intended for parts where bending, moderate forming or drawing, and welding may be involved.

1.2 This specification is not applicable to the steel covered by Specification A 635/A 635M.

1.3 The values stated in either acceptable metric units (SI) or in inch-pound units shall be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system must be used independently of the other, without combining values in any way.

2. Referenced Documents

2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products²

A 568/A 568M Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for²

A 635/A 635M Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Carbon, Hot-Rolled²

A 749/A 749M Specification for Steel, Strip, Carbon and High-Strength, Low-Alloy, Hot-Rolled, General Requirements for²

3. General Requirements for Delivery

3.1 Material furnished under this specification shall conform to the applicable requirements of the current edition of Specification A 568/A 568M for sheets, and Specification A 749/A 749M for strip, unless otherwise provided herein.

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 A01.19 on Steel Sheet and Strip.

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² *Annual Book of ASTM Standards*, Vol 01.03.

4. Ordering Information

4.1 It is the purchaser's responsibility to specify in the purchase order all ordering information necessary to purchase the needed material. Examples of such information include but are not limited to the following:

4.1.1 ASTM specification number and year of issue.

4.1.2 Name of material (hot-rolled commercial steel (CS) sheet or strip),

4.1.3 Type – When a type is not specified, Type B will be furnished,

4.1.4 Copper-bearing steel (if required),

4.1.5 Condition:

4.1.5.1 Material to this specification is furnished in the hot-rolled condition. Pickled (or blasted cleaned) must be specified, if required.

4.1.6 Type of edge (see 8.1),

4.1.7 Specify oiled or not oiled, as required (see 8.2).

4.1.8 Dimensions (thickness, width, and whether cut lengths or coils),

4.1.8.1 As agreed upon between the purchaser and the producer, material ordered to this specification will be supplied to meet the appropriate standard or restricted thickness tolerance table shown in Specification A 568/A 568M.

NOTE 1—Not all producers are capable of meeting all of the limitations of the thickness tolerance tables in Specification A 568/A 568M. The purchaser should contact the producer regarding possible limitations prior to placing an order.

4.1.9 Coil size (must include inside diameter, outside diameter, and maximum mass),

4.1.10 Application (part identification and description), and

4.1.11 Special requirements, if required.

NOTE 2—A typical ordering description is as follows:
ASTM A 569-XX [or A 569M-XX], Hot-Rolled Commercial Steel (CS) Sheet, Type A, Pickled and Oiled, Cut Edge, 0.075 by 36 by 96 in. [or 1.85 by 900 by 2450 mm] Standard Thickness Tolerance, for Part No. 6310, Shelf Bracket.

5. Materials and Manufacture

5.1 *Condition*—Unless otherwise specified, the material is furnished in the as-rolled condition (not annealed or pickled).

6. Chemical Composition

6.1 *The Cast or Heat (formerly Ladle) Analysis* of the steel shall conform to the requirements as to chemical composition shown in Table 1.

6.1.1 Each of the elements listed in Table 1 shall be included in the report of the heat analysis. When the amount of copper, nickel, chromium, or molybdenum is less than 0.02 %, the analysis may be reported as <0.02 %. When the amount of vanadium or columbium is less than 0.008 %, the analysis may be reported as <0.008 %.

6.2 When a type is not specified, Type B will be furnished.

7. Bend Test

7.1 Typical nonmandatory mechanical properties are found in Table 2.

7.2 The material shall be capable of being bent at room temperature in any direction through 180° flat on itself without cracking on the outside of the bent portion (see the section on bend test in Test Methods and Definitions A 370).

8. Workmanship, Finish, and Appearance

8.1 *Edges*:

8.1.1 Sheet can be supplied with mill edge or cut edge.

8.1.2 Strip can be supplied with mill edge or slit (cut) edge.

8.2 *Oiling*—Hot-rolled, non-pickled material is commonly furnished not oiled while hot-rolled pickled (or blast cleaned) material is commonly furnished oiled. When required, pickled (or blast cleaned) material may be specified to be furnished not oiled, and nonpickled material may be specified to be furnished oiled.

9. Certification and Reports

9.1 The producer shall furnish copies of a report showing test results of the heat analysis. The report shall include the

TABLE 1 Chemical Composition

Composition—Weight % Heat Analysis			
Element	Type A ^{A,B}	Type B ^{C,D}	Type C ^{A,B}
Carbon	0.10 max	0.02/0.15	0.08 max
Manganese, max	0.60	0.60	0.60
Phosphorous, max	0.030	0.030	0.10
Sulfur, max	0.035	0.035	0.035
Aluminum ^{E,F}
Silicon ^F
Copper			
When copper steel is specified, min ^G	0.20	0.20	0.20
When copper steel is not specified, max ^G	0.20	0.20	0.20
Nickel, max ^G	0.20	0.20	0.20
Chromium, max ^{G,H}	0.15	0.15	0.15
Molybdenum, max ^G	0.06	0.06	0.06
Vanadium, max	0.008	0.008	0.008
Columbium, max ^B	0.008	0.008	0.008
Titanium, max ^B	0.008	0.008	0.008

^A Types A and C may be furnished as vacuum degassed and/or chemically stabilized at the producer's option.

^B For carbon levels less than or equal to 0.02 %, columbium and/or titanium may be used as chemical stabilizing elements in Types A and C at the producer's option. In such case, the Table 1 limitations on such elements do not apply. Rather, the limit on columbium shall be 0.10 % maximum and the limit on titanium shall be 0.15 % maximum.

^C Type B describes the most common product previously included in Specification A 569/A 569M.

^D Specify Type B to avoid carbon levels below 0.02 %.

^E When an aluminum deoxidized steel is required for the application. Commercial Steel (CS) may be ordered to a minimum of 0.01 % total aluminum.

^F Where an ellipsis (. . .) appears in this table, there is no requirement, but the analysis shall be reported.

^G When copper steel is not specified, the sum of copper, nickel, chromium, and molybdenum shall not exceed 0.50 % on heat analysis. When one or more of these elements is specified, the sum does not apply; in which case, only the individual limits on the remaining elements will apply.

^H Chromium is permitted, at the producer's option, to 0.25 % maximum when the carbon is less than or equal to 0.05 %. In such case, the limit on the sum of the four elements in Footnote G does not apply.

purchase order number, the ASTM designation number, and the cast or heat number representing the material.

10. Keywords

10.1 carbon steel sheet; carbon steel strip; hot rolled steel sheet; hot rolled steel strip; steel sheet; steel strip

TABLE 2 Typical Mechanical Properties^{A,B}

Yield Strength ksi [MPa] ^C	30/50 [205/345]
Elongation in 2 in. [50 mm] % ^C	≥ 25

^A The typical mechanical property values presented here are nonmandatory. They are intended solely to provide the purchaser with as much information as possible to make an informed decision on the steel to be specified. Values outside of these ranges are to be expected.

^B The yield strength tends to increase and elongation tends to decrease as the sheet thickness decreases. These properties represent those typical of material in the thickness range of 0.100 to 0.150 in. [2.5 to 3.5 mm].

^C Yield strength and elongation are measured in the longitudinal direction in accordance with Test Methods and Definitions A 370.

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