

ASTM Designations

The following descriptive terms are taken from the ASTM Specification that cover Cold Rolled Steel Sheet products. The corresponding ASTM Specification is listed for each of the designators.

Commercial Steel (CS) – Described in ASTM Specification A1008..

Drawing Steel (DS) – Described in ASTM Specification A1008..

Deep Drawing Steel (DDS) – Described in ASTM Specification A1008.

. The usual metallurgical approach is to provide DDS as a low carbon/low manganese steel chemistry combined with low amounts of residual elements. It is not provided as a stabilized steel.

Extra Deep Drawing Steel (EDDS) – Described in ASTM Specification A1008.

vacuum degassed and chemically stabilized grade to meet the most demanding applications for drawability.

High Strength Low Alloy (HSLA) Steel – Described in ASTM Specifications A606, or A1008.

If manufactured using carbon/manganese steels without microalloying with columbium, titanium, or vanadium, the product is labeled a Structural Steel (SS). If the product requires the use of microalloying with columbium or vanadium to achieve high strength and improved formability compared with SS grades, it is supplied as HSLA steel or HSLA-F steel (Inclusion Shape Control).

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Commercial Steel – CS Type B

CS Type B

ASTM A1008 CS Type B

ASTM A1008 CS Type B & SAE Grade 1006, 1008, 1009, 1010, or 1012

CS Type B (Must be within the following compositional limits: C - 0.02/0.15, Mn - 0.60 max., P - 0.030 max., S - 0.035 max.)

Commercial Steel – CS

ASTM A794 CS & SAE Grade 1015 through 1023

CS and SAE 1015 through 1023

Drawing Steel – DS Type B

DS Type B

ASTM A1008 DS Type B

DS Type B (Must be within the following compositional limits:

C - 0.02/0.08, Mn - 0.50 max., P - 0.020 max., and S - 0.030 max.)

Deep Drawing Steel – DDS

ASTM A1008 DDS (Composition must be within the following limits:

C - 0.06 max., Mn - 0.50 max., P - 0.020 max., and S - 0.025 max.)

DDS (Composition must be within the following limits:

C - 0.06 max., Mn - 0.50 max., P - 0.020 max., S - 0.025 max.)

Extra Deep Drawing Steel – EDDS

ASTM A1008 EDDS (Must be vacuum degassed and chemically stabilized and meet the following limits: C - 0.02 max., Mn - 0.40 max., P - 0.020 max., and S - 0.020 max.)

EDDS (Must be vacuum degassed and chemically stabilized and meet the following compositional limits: C - 0.02 max., Mn - 0.40 max., P - 0.020 max., and S - 0.020 max.)

Structural Steel**

ASTM A1008 Structural Steel

**Produced with carbon and manganese only. No microalloying elements added.

High Strength Low Alloy Steel – HSLA Steel***

ASTM A606, or A1008 HSLA steel or HSLA-F steel

No ASTM specification and ordered to meet a minimum or range in yield strength and/or tensile strength

***Produced using microalloying technology to meet the strength and formability requirements.

Specified Hardness

This product term is not listed in the ASTM specifications. It requires only that the cold rolled product meet a minimum hardness value or a specified hardness range.

Dent Resistant (Bake Hardenable)****

BH 29

BH 33

BH 36

BH 40

BH180

BH210

BH240

BH270

****These very specialized steels are manufactured to possess a behavior in which they "age harden" after forming to meet a higher yield strength. Usually, the product is applied for drawn parts that are subsequently paint-cured at elevated temperatures (up to 500°F). This allows the production of a formable, low yield strength product during our manufacture. Subsequent to drawing and baking (after application of the paint), the formed part exhibits a considerably higher yield strength, and thus, exhibits good resistance to denting. Bake Hardenable steels are applicable for parts that require the combination of low yield strength and high formability as produced by the steel manufacturer, and then high resistance to denting after fabrication. (Resistance to denting is a function of the yield strength of the product.)

ASTM Specifications for Product Designations

ASTM Specification A568 – This specification covers all of the general requirements related to Cold Rolled Steel Sheet products. General requirements relate to dimensional tolerances, testing practices, etc. Items that relate to the specific product designations are covered in the following individual product specifications.

ASTM A1008 Commercial Steel (CS)

High Strength with Columbium or Vanadium (HSLA or HSLA-F)
Structural Steel (SS)
Drawing Steel (DS)
Deep Drawing Steel (DDS)
Extra Deep Drawing Steel (EDDS)

ASTM A606 – High Strength Steel with Improved Corrosion Resistance (HSLAS)
ASTM A794 – Commercial Steel (CS) with 0.15 to 0.25% carbon

High Strength Sheet Steels Uniform Designator System

The uniform designator system for High Strength Sheet steel has five basic components: (1) the sheet product prefix, (2) the minimum yield strength in ksi, (3) a chemical composition classification, (4) a classification for the deoxidation practice, and (5) a classification for the minimum tensile strength.

(1) Sheet Product Prefix –

HR – Hot Rolled Sheet
CR – Cold Rolled Sheet
GP – Galvanized Sheet
LT – Long Terme Coated Sheet
GL – GALVALUME® Sheet
EG – Electrogalvanized

(2) Yield Strength –

Numerical description of the minimum yield strength in ksi (3 digits are used for yield strengths equal to or greater than 100 ksi).

(3) Steel Type –

Each steel type is designated by a letter classification.

S = Structural Steel
X = Low Alloy Steel
W = Weathering Steel
D = Dual Phase Steel

(4) Deoxidation Practice –

F = Killed Steel plus Inclusion Shape Control Practice
K = Killed Steel Practice

(5) Tensile Strength -

Numerical description of the minimum tensile strength in ksi (3 digits are used for tensile strengths equal or greater than 100 ksi).

Notes:

A). "99" in the tensile strength column indicates there is no minimum value specified.

B). As a general rule, XK and XF designators provide products with improved formability over SK and SF designators, respectively

C). For any given minimum yield strength, formability can be improved by the use of special alloying additions and specialized heat treatment, as well as by improved deoxidation practices and by inclusion shape control.