

Glossary

General Terms to Understand

A36 Steel - The most common structural carbon steel grade, used for general fabrication like plate, angle, channel, and beams.

Abrasive Blasting (Sandblasting) - A surface preparation process that uses high-pressure abrasive media to remove rust, scale, and old coatings before welding, painting, or powder coating.

AISI - American Iron and Steel Institute; a standards body whose grade numbers (like AISI 1018) classify carbon and alloy steels by composition.

Angle Iron - An L-shaped structural steel product used for framing, bracing, and support in construction and fabrication.

Annealed - A process through which steel is heated to a specified temperature for a period of time and then allowed to cool. This process makes the steel more malleable and easier to bend.

Architectural Aluminum - Aluminum shapes that are generally used where appearance is the primary concern.

ASTM - American Society for Testing and Materials; the organization that sets the material and testing standards (like ASTM A36) referenced throughout this page.

Bar Channel - Structural channel where the web and the flange are less than 3 inches. They are lightweight and are defined by the dimensions of the web, the flange, and the thickness.

Bar Grating - A steel product designed to be a weight bearing platform. Steel cross bars are welded to bearing bars made from strip steel.

Bar Stock - Solid metal in round, square, flat, rectangular, or hexagonal cross-sections, used for machining and fabrication.

Beveled End - The wall of a pipe is cut at an angle in preparation for a butt weld.

Carbon Steel - Steel whose primary alloying element is carbon rather than chromium or nickel; strong and cost-effective, but less corrosion-resistant than stainless.

Channel - "Cee" shaped structural steel shape that has flanges perpendicular to a web. The flanges may be square to the web or sloped. The depth of the web and the weight per foot define standard, junior and miscellaneous channel.

Cold Rolled Steel - is worked (rolled, hammered, or stretched) to size while it is cold; it is harder than hot rolled steel.

Curb Angles - Stud bolts welded to the inside or outside of the structural angle allow the angle to be embedded in concrete.

Double Random Length (DRL) - A pipe that can range from 34 to 48 feet in length.

Drawn Over Mandrel (DOM) - Mechanical Tubing that is cold drawn over a hardened steel rod to perfect and tighten the tolerance. DOM tubing is welded.



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Dross - Metal oxide residue left on the underside of a cut edge, most common with plasma and oxy-fuel cutting.

Electric Resistance Weld (ERW) - Tubing where the seam is welded using a process where the edges are heated up using electric current to melt and fuse metal at the seam.

Embed Plate - Used to attach steel to concrete. A steel plate with headed studs welded to it that is embedded in wet concrete with the plate surface flush to the finished concrete surface. After the concrete cures, other structural steel is then welded to the exposed plate.

Expanded Metal - Sheet metal that's been slit and stretched into a diamond-mesh pattern, used for grating, fencing, and ventilation applications.

Filler Metals - Used in welding to provide additional metal during welding, sometimes delivering the necessary flux.

Examples: Welding Rods, TIG Wire, MIG Wire

Flange - The part of a beam or channel that is perpendicular to the web.

Floor Plate - Steel or Aluminum plate with a checkered pattern for slip prevention. They are also known as Tread Plates or Diamond Plates.

Galvalume - A coating used on metal building parts that is a combination of zinc and aluminum.

Galvanized Steel - Steel that is coated in a thin layer of zinc to add corrosion resistance, commonly used outdoors or in high-moisture environments.

Gauge - A numbering system for sheet metal thickness — the higher the gauge number, the thinner the material.

Grating - An open, load-bearing metal panel (often welded steel bars) used for walkways, platforms, and drainage covers.

Electro galvanized - Zinc is plated onto the steel surface using electric charges. Electroplating gives precise control over the thickness of the coating.

Heat Number - A unique identifier assigned to a specific batch (heat) of steel during production, used for material traceability.

Heat Treatment - Steel is heated in a controlled way to change the properties of the steel to optimize characteristics such as hardness, strength, or ductility.

Hot Dipped - Steel is submerged in a bath of molten zinc.

Hot Rolled Steel - Steel rolled at high temperature, resulting in a slightly rougher surface and looser tolerances than cold-rolled, but typically lower cost.

I Beams - Another name for Standard beams. These beams have tapered flanges.

Inside Diameter/Dimension (ID) - The width of the material inside the walls $ID = OD - (2 * \text{wall thickness})$.



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Joint - Another word for a single length of steel, most often used when referring to pipe.

Junior Beams - Junior beams have tapered flanges and are lightweight versions of Standard Beams.

Kerf - The width of material removed by a cutting process (laser, plasma, saw); important to account for when calculating final part dimensions.

Lifting Lug - A standard part that is made to be welded to a steel surface provides a solid point to lift a heavy object with a crane.

Mechanical Tubing - Hollow steel shapes intended to be used in construction rather than to carry liquids, gasses, and solids. These shapes are specified by their outside diameter.

Mill Test Report (MTR) - A document from the steel mill certifying the chemical composition and mechanical properties of a specific batch of material.

Nominal Pipe Size(NPS) - The North American standards for pipe sizes. NPS loosely correlates with the inside diameter of the pipe.

Outside Diameter/Dimension (OD) - The width of the material from side to side, including the walls.

Perforated Metal - Sheet metal punched with a repeating pattern of holes, used for filtration, ventilation, and architectural applications.

Pickled & Oiled - Pickling is a process that uses acids to clean steel of rust, dirt, and oil. Steel is then oiled to reduce corrosion.

Plain End - End of a pipe that is cut square. It is not beveled or threaded.

Plasma Cutting - A process where steel is cut by a jet of ionized gas and an electric arc. Steel is melted and blown away by the plasma arc, which can exceed 20,000 °C

Plate vs. Sheet - Both are flat-rolled steel; the general dividing line is thickness — sheet is typically under $\frac{3}{16}$ ", plate is $\frac{3}{16}$ " and thicker.

Powder Coating - A dry finishing process where powdered paint is electrostatically applied and cured with heat, producing a durable, chip-resistant finish.

Purl ins - Metal Building components that come in Cee and Zee shapes. They are made from sheet steel bent into a C or a Z shape. They are used as joists and studs in metal building construction.

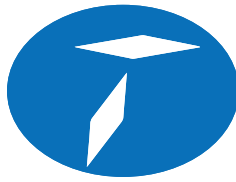
Random Length - Steel or Aluminum Pipe or Shapes that do not come in exact lengths.

Rebar - Reinforcing bar, a ridged steel rod embedded in concrete to add tensile strength.

Red Oxide - Primed Typically used on steel as a protective coating until the final finish coating is applied.

Schedule - Schedule is a non dimensional measurement of the wall thickness of a pipe.

Single Random Length (SRL) - A pipe that can range from 17 to 24 feet in length.



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Stainless Steel - Steel grade that contains more than 10% chromium. Stainless steel is resistant to corrosion and maintains strength at higher temperatures than mild steel.

Standard Beams - Standard beams have tapered flanges out from the beam's web.

Structural Aluminum - Aluminum shapes where strength is more important than appearance.

Structural Steel - Steel shapes (beams, angles, channels) manufactured to standardized dimensions for use in construction framing.

Tee Beams - Steel rolled into the shape of a "tee". They can also be made from Wide Flange or Standard Beams by splitting along the length of the web to create the "tee".

Tensile Strength - The maximum stress a material can withstand while being stretched before breaking.

Threaded and Coupled - Pipe is threaded around the outside (usually on both ends) and sold with a threaded coupling so joints can be connected quickly without welding.

Tolerance - The allowable difference between the stated size and the actual size produced, usually stated as plus or minus fractions of an inch.

Web - The central part of a beam or channel, perpendicular to the flanges.

Wide Flange Beams - Wide flange beams have flanges that have a consistent thickness and are square with the web of the beam.

Yield Strength - The stress at which a material begins to permanently deform rather than return to its original shape.