

Fabricated Metals Manufacturing Glossary

Term:	Definition:
American National Standards Institute (ANSI)	A private, nonprofit organization that administers, coordinates, and publishes the U.S. voluntary standardization and conformity assessment system. ANSI handles standards and safety regulations for a variety of industries.
Alloy	A substance with metallic properties. Alloys are composed of two or more chemical elements; at least one of the elements must be a metal.
Bending or Folding	A subset of metal forming that applies force to reshape metal. Bending is one of the most common sheet metal fabrication processes and is used to create angular and u-shapes such as corners, tubes, and so on.
Blanking	The process of cutting that larger piece into workable pieces (or blanks) that's then used to create the end product via any number of processes. Blanking is oddly similar to using a cookie cutter where the end result is a piece of metal in a desired size.
Buckling	Folds, creases or wrinkles that form on the surface of a pipe or tube due to the bending operation.
Casting	Heating metal to its melting point and pouring it into a cast or mold with a desired shape. As it cools, the metal solidifies and can be removed from the cast.
Coil	A sheet of metal wrapped into a roll. Coil doesn't replace sheets of metals everywhere – there are some parts that manufacturers need to use sheets, while others require coils. Metal thickness and machines also come into play on whether a manufacturer uses sheets or coils for end products. Coils allow metal fabricators to buy in bulk to reduce material costs.
Computer-aided design (CAD)	A design process that uses a computer program to create, modify, analyze, or optimize a design. In fabricated metals manufacturing, CAD is often the first stage of a project and is used to make precise specs that are then used to create the actual end product. CAD helps manufacturers design and redesign products.
Computer-aided manufacturing (CAM)	Using the CAD information or data to control a machine to produce the part.
Computer numerical control (CNC)	A designation for a machine that uses a dedicated computer to control its actions. This increases the machine's precision and is often used in a milling process.
Cutting	One of the most commonly used metal fabrication process, cuts sheets of metal, metal bars, or metal rods into smaller sections and different shapes. These cuts are performed on a range of machinery from simple saws to more complex lasers and high-tech machinery.
Deoxidation	The process of removing oxygen from molten steel using a suitable chemical agent, such as aluminum or silicon. This is one of the steps in the steelmaking process.
Die	A tool used to cut and form metal into a desired shape not and uses extreme pressure to shape metals.
Etch test	Exposure of a metal to acid attack to identify the presence of foreign matter, defects, segregation pattern, or flow lines.

Flashing	Excess metal attached to the product that needs to be removed. Flashing can be caused by liquid metal leaking between two surfaces, old or worn molds, welding pieces together, etc. Manufacturers deflash, or remove the excess metal, by cutting, breaking, grinding, smoothing, and polishing, to name a few.
Forming metal	The process of shaping metal from a solid state. Most of the metal objects you see every day are created through forming, including metal sheets, wires, pipes, fasteners, and so on. There are several different ways to form metal; some of the more common are stamping and forging.
Forging	The process of shaping metal through impact or pressure, such as hammering, pressing, or rolling. While you can cold-forge, this process is typically done by heating the metal before reshaping it.
Grade	The type of metal being used. The grade of a coil is defined by its chemical ingredients and its mechanical properties.
Hardness	Metals resistance to indentation, scratching, abrasion, or cutting. Materials with little resistance are called soft; those with high resistance are called hard.
Heat treating	The method of heating and cooling a piece of metal to increase its strength.
Metal fabrication	The process of creating metal product by manipulating raw metal. The result may be machines, parts, structure, tools, and so on, all created from various raw materials.
Pickling	The chemical removal of contaminants such as dirt or oxides by immersing iron or steel in an acid solution. The most common pickling solutions are sulfuric acid and hydrochloric acids.
Punching	A process that creates holes in a sheet of metal, likely to attach fasteners, latches, and other components.
Rust	The reddish material, usually hydrated iron oxide, that forms on iron as a result of humidity or a chemical attack.
Shearing	A type of cutting used when sheets of metal require long cuts. Typically, a sheet of metal is fed horizontally through a metal-cutting machine and is cut.
Stamping	Placing a blank, or workable piece of metal, into a press that forms it into a specific shape. A stamping press uses a die. This may be a single process or could include a series of stages to get the desired shape. Stamping is a cold-forming process usually done on sheet metal.
Synthetics	Chemical solutions that are oil- and soap-free that mimic traditional oil products. Since they are water-based, like emulsions, they also provide cooling.
Tempering	A heat-treated process that reduces brittleness and removes internal stresses and strains in hardened steel.
Welding	The process of using high heat to melt parts together; as metal cools, it fuses the different pieces together.