

Product Information

Wrought Iron or Mild Steel

The word “wrought” is an archaic past participle of the verb “to work,” and so “wrought iron” literally means “worked iron”. Wrought iron is a general term for the commodity, but is also used more specifically for finished iron goods, as manufactured by a blacksmith. Wrought iron originally was an iron alloy with a very low carbon content in contrast to cast iron, and has fibrous inclusions known as slag inclusions which gives it a ‘grain’ that is visible when it is etched or bent to the point of failure.

Wrought iron is very tough, malleable, ductile, corrosion resistant and very easily welded. Wrought iron is no longer produced on a commercial scale. Many products described as wrought iron, such as guard rails, garden furniture, panels and gates are made of mild steel. They retain that description because in the past they were wrought (worked) by hand.

Cast Iron

Cast iron, unlike wrought iron, is brittle and cannot be worked either hot or cold, and can break if struck with a hammer. Cast iron is iron or a ferrous alloy which has been heated until it liquifies, and is then poured into a mould to solidify.

It is made by re-melting pig iron, often along with substantial quantities of scrap iron, scrap steel, lime stone, carbon and taking various steps to remove undesirable contaminants. The alloy constituents affect its colour when fractured. White cast iron has carbide impurities which allow cracks to pass straight through while grey cast iron has graphite flakes which deflect a passing crack and initiate countless new cracks as the material breaks. Grey cast iron has less tensile strength and shock resistance than steel, but its compressive strength is comparable to low and medium carbon steel.

Cast Steel

Cast steel was the first type of steel that allowed alloys to be added to the iron. Prior to this method, manufacturers had not been able to get steel hot enough to melt. Melting allowed other elements, such as nickel, to be mixed into the metal, thus strengthening the steel.

Steel casting is a specialised form of casting involving various types of steel. Steel castings are used when cast irons cannot deliver enough strength or shock resistance. Cast steel allows for a more uniform composition of, and fewer impurities in, steel than any previous manufacturing process. Steel is made by combining iron with carbon or other alloys. Iron is a soft metal, so not ideal for many construction purposes. The creation of steel removes many of the impurities in iron, which allows steel to be harder and more durable.

Drop Forged / Die Forged Steel

Drop forging is a process that gradually shapes a heated piece of metal, called an ingot. It involves forming the ingot with repeated blows from a hammer or die that is raised and then dropped onto the component, flattening it or forcing it into a mould. Depending on the complexity of the component’s design, the process sometimes requires using several dies in progression. The drop forging process usually produces a very close approximation of the finished piece.

Forging is generally accepted to produce finished items of a better quality due to the inherent lack of imperfections in the steel structure found with other fabrication methods.

Forging is one of the oldest metal forming methods and involves repetitive manual and powered impact to force red hot steel into a certain final shape. Manual forging is carried out by a blacksmith using smaller, handheld hammers, tongs and chisels with the hammering typically taking place on an anvil.

Forged carbon steel parts are usually believed to be superior to those made by other methods such as casting. This is due to the fact that the hammering of the metal during forming eliminates most of the microscopic crystalline flaws, such as air bubbles and fissures, which characterise cast components.

Pressed Steel

Cold-formed steel is not formed with heat, like most other steels; instead, it is formed with rollers and presses to make it the correct size and shape. This results in cold-formed steel being lighter than other steels, and it tends to have somewhat more elasticity.

Cold-formed steel starts as plates of steel that are rolled and stamped until the plates are the correct size and shape. The rollers thin out the steel, so it can be easily bent, and the presses add curves and lines so the steel takes on the intended shape. While the process is not entirely cold, because the presses and rollers cause heat by friction and movement, the heat is not enough to melt or deform the steel without additional pressure.

Galvanising

When a product will get in contact with moisture it needs to be galvanised in order to protect it from corroding. The steel gets coated in layers of molten zinc oxide as this protective metal does not easily rust. The coating also gives the steel a more durable, hard to scratch finish that many people find attractive. For countless outdoor, marine, or industrial applications, galvanised steel is an essential fabrication component.

When steel is submerged in melted zinc, a chemical reaction permanently bonds the zinc to the steel. Therefore, the zinc isn’t exactly a sealer, like paint, because it doesn’t just coat the other metal; it permanently becomes a part of it. The most external layer is all zinc, but successive layers are a mixture of zinc and iron, with an interior of pure steel.

Powder Coating

Powder coating is a type of coating that is applied as a free-flowing, dry powder. The main difference between a conventional liquid paint and a powder coating is that the powder coating does not require a solvent to keep the binder and filler parts in a liquid suspension form. The coating is typically applied electrostatically and is then cured under heat to allow it to flow and form a “skin”. It is usually used to create a hard finish that is tougher than conventional paint.

Because powder coating does not have a liquid carrier, it can produce thicker coatings than conventional liquid coatings without running or sagging, and powder coating produces minimal appearance differences between horizontally coated surfaces and vertically coated surfaces.