



Grey Cast Iron

What is Grey Cast Iron?

Grey iron is an alloy of iron, carbon and silicon that has been melted and poured into a mould to form a shape. If molten iron is allowed to cool normally the carbon comes out of solution and forms flakes of graphite which run through the ferrite/pearlite matrix.

History

- The Chinese developed furnaces for making cast iron around 500 BC.
- European development of the cast iron process occurred in the 12th century.
- The 18th century saw extensive use in domestic areas such as fire places.
- The industrial revolution led to its use in bridges, locomotives and ship construction
- Modern production standards give a wide range of uses.



Terminology

- Cast iron, grey cast iron, gray cast iron, flake graphite iron, flake graphite cast iron and Hematite all refer to the same material
- The term grey is used because of the colour of the fracture surface.

Properties

- Good under compression. Not good under tension, bending or shock loading.
- A range of tensile strength and hardness to suit different applications.
- The free graphite expands on solidifying, giving sharp, well defined castings.
- Good corrosion resistance when compared to mild steel.
- The graphite acts as a lubricant, improving wear resistance.
- Good thermal conduction and vibration damping properties
- Works well under continual heating and cooling cycles.
- Good machineability.
- Difficult to weld.

Uses

- Spares and consumables in forges and rolling mills.
- Brake disks and drums particularly where castings are subject to repeated heating and cooling cycles.
- Valve and pump applications.
- Marine castings
- Motor housings, gearboxes, engine blocks and machinery components.
- Architectural, decorative and sculptural castings.
- Lower cost compared to alternative materials.
- Suited to low, medium and high production quantities.

Material Standards

- BS 1452, BS EN 1561 and ISO 185
- Equivalent DIN, ASTM, SAE and other national standards.
- Various trade names, including the Meehanite range.

If you need to order a casting in cast iron and are confused by its description or it has a specification you don't recognise on a drawing, please contact us as there is a good chance we will recognise it. If we don't, we have access to a world wide data base that should enable us to identify the material and offer the equivalent grade within ISO 185.