# Guide to the engineering properties of iron castings.

## Council of Ironfoundry Associations - Casting properties [SubsTech]

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**Manufacturing Process of Cast Iron Castings**

Purification of iron is costly but does improve the permeability of iron with the disadvantage of increasing eddy-current losses.

**Cast iron its types , properties and its applications....**

The value of coefficient of thermal expansion increase with temperature. It is grey colored because it contains the carbon in the form of free graphite flakes. White cast iron which is very hard and contains iron carbides, is normally considered to be unweldable.

**Cast irons**

Stress-relieving at 150-200°C for a few hours in a furnace, or hot oil is desirable but is often safely omitted as in case of camshafts, it decreases the hardness of the surface. According to the chemical composition, cycle of the annealing process, the malleable cast iron classified into i blackheart malleable iron, Ii whiteheart malleable iron and iii pearlitic malleable iron. Ductile cast iron has very good corrosion resistance, high strength and durability.

**Cast Iron as a Building Material**

Hard and brittle constituent presented in these alloys, cementite is a metastable phase, and can readily decompose to form α-ferrite and graphite.

**Cast Iron: Physical and Engineering Properties**

Cast irons, however, do not have sufficient ductility to be rolled or forged. Many gray, ductile, and alloy-iron components can be machined directly from bar that is continuously cast to near-net shape. Alloys having low are the most susceptible to cracks formation.

**Cast irons**

Cast iron in general are never water-quenched except in surface-hardening as it has relatively high hardenability to get martensite by oil-quenching, and without inducing large quenching stresses.

**Properties of Cast Iron**

It is more energetically favorable to rotate the spins over many atomic distance rather than one.

**Cast irons**

As the lack of ductility is caused by the coarse graphite flakes, the graphite clusters in malleable irons, and the nodular graphite in SG irons, give significantly higher ductility which improves the weldability. Unalloyed grey iron respond well to flame-hardening provided CEV is below 4. It is one of the hardest form cast iron.

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