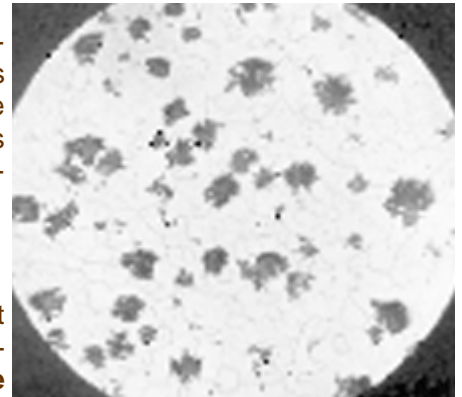


Malleable Iron Property.

Malleable Cast Iron is the traditional material for manufacturing pipe fittings whose characteristics make it as ideal choice. It is an iron-carbon alloy which combines the outstanding properties of cast iron and steel to produce a material which can still be cast but has improved strength and ductility. It also allows the production of complex shapes combined with a thin wall section.

In its cast state it is very hard and brittle and unsuitable for most engineering applications. A controlled heat treatment process (annealing) is applied to the cast material which changes the structure and reduces the carbon content. The resulting microstructure gives a material which is less hard, no longer brittle and now has good malleable and ductile properties while retaining a sufficiently high strength.



Types

There are two distinct types of malleable cast iron which are dependent mainly on the annealing method used. Their names result from the different visual appearances at the fracture surfaces: **Whiteheart malleable iron** and **Blackheart malleable iron**.

Blackheart malleable iron is usually annealed in an inert atmosphere (protective gas or vacuum) and has a uniform microstructure. The higher carbon content is evenly distributed throughout the structure.

Material grade and properties:

Within the material types, a number of different grades are possible. The grades are defined by:

Material type: blackheart and whiteheart

Minimum tensile strength (MPa)

Percentage elongation of a standard test piece.

Materials compare:

Standard	Grade	Tensile strength (MPa)	Yield Strength (MPa)	Elongation (%)	Hardness (HB)
GB 9440-88	KTH300-6	300	-	6	150
	KTH330-8	330	-	8	
	KTH350-10	350	200	10	
NBR 6590	FMP-30006	300	-	6	149
	FMP-35012	350	200	12	
EN1562	EN-GJMB-300-6	300	-	6	150
	EN-GJMB-350-10	350	200	10	150
ISO 5922 BS 6681	B30-06	300	-	6	150
	B32-12	320	190	12	
	B35-06	350	200	10	
DIN 1692	GTS-35-10	350	200	10	150
ASTM A197		275	200	5(50mm)	-