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SPEROIDAL GRAPHITE IRON AS REPLACEMENT MATERIAL TO STEEL CASTINGS

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Spheroidal Graphite Iron is distinguished by its high strength, toughness and ductility combined with excellent casting properties and good machinability. It has a high modules of elasticity and good resistance to corrosion. It derives its name from the form of graphite. The compact spheroids interrupt the continuity of the matrix much less than the graphite flakes, and this results in high strength and toughness.

Spheroidal graphite iron is easy to melt and cast and cheaper than cast steel castings. It is a whole range of alloys which come within the group of cast iron. These castings can achieve tensile strength of 400 - 800 N/mm^2 with (15-20)% elogation. The ferritic grade of S.G. iron, where the graphite spheroids are embeded in a ferritic matrix, has excellent

machining properties, because the metal is removed as small chips, while at the same time tool life is increased because the graphite lubricating the cutting tool.

It had been observed by experiments, the relationship yield strength to tensile strength for steel is about 0.63, but for spheroidal iron is 0.50. This means 25% higher relationship for the spheroidal iron. The main reason why S.G. iron is chosen instead of steel is that ductile iron can do the same job at much lower cost. Hence this has become one of the world's most important engineering material.