

**CAST IRON - GREY****DSC 1.1.7****Definition:**

**Grey Iron** : So called because of the colour of the fracture face. Grey iron is a hard, brittle alloy of iron and carbon suitable for castings weighing approximately 10% less than steel equivalent.

**Features:**

Grey cast iron offers very good compressive strength often three to four times greater than its tensile strength. This is due in part to the graphite flakes in the structure interrupting the continuity of the matrix.

As a negative, these flakes act as voids & crack initiation sites. Therefore grey cast irons are weak in tension and offer negligible ductility.

Compared to steel, they are considered brittle.

As a positive, the graphite flakes do offer benefits namely, a lubricating effect in wear applications and a damping effect in vibration applications.

Grey cast iron has better casting characteristics than steel allowing finer detail and more complex shapes. It also machines more easily and quickly providing, if required, a polished surface for copper or chromium plating.

A disadvantage is that it cannot be readily welded.

General engineering castings benefit from the ease of casting, the comparatively simple pattern equipment and the shorter lead times to produce castings.

**ASM (DEK) Applications:**

Rising Table Top

**These values are representative and should not be considered as - definitive. For critical applications, refer to material data-sheet.**

| TYPICAL MECHANICAL PROPERTIES (30mm Dia. As cast) |                              |
|---------------------------------------------------|------------------------------|
| DENSITY:                                          | <b>7079 Kg/m<sup>3</sup></b> |
| YOUNGS MODULUS:                                   | <b>110 GPa</b>               |
| POISSONS RATIO:                                   | <b>0.26</b>                  |
| YIELD STRENGTH                                    | <b>170 MPa</b>               |
| TENSILE STRENGTH                                  | <b>250 MPa</b>               |

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| CHEMICAL ANALYSIS |                  | BENEFIT                                         |
|-------------------|------------------|-------------------------------------------------|
| <b>Carbon</b>     | <b>2.5/4.0</b>   | Primary source for graphite                     |
| <b>Silicon</b>    | <b>1.0/3.0</b>   | Higher the percentage = more graphite content.  |
| <b>Manganese</b>  | <b>0.20/1.0</b>  | Negates sulphur = cracked castings              |
| <b>Sulphur</b>    | <b>0.02/0.25</b> | A contaminant: forms iron sulphide for hardness |
| <b>Phosphorus</b> | <b>0.002/1.0</b> | Increases the fluidity of iron.                 |

| CURRENT INTERNATIONAL SPECIFICATION COMPARISON |                    |
|------------------------------------------------|--------------------|
| BRITISH: BS                                    | BS 1452: GRADE 250 |
| GERMAN: DIN                                    | EN -GJL-250        |
| AMERICAN: AISI                                 | A48 40 B           |
| JAPANESE GRADE                                 | JIS FC 250         |
| CHINA GRADE                                    | HT 250             |

**REPLACES**

| BS 1452 (1961) | COLOUR CODE | DESCRIPTION    |
|----------------|-------------|----------------|
| GRADE 17       |             | Grey Cast Iron |

**Alternatives:**

Alternative materials are allowed only with the express written permission of ASMPT. Please email details of your request to [engineering\\_enquiries@asmpt.com](mailto:engineering_enquiries@asmpt.com)

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