

# DATA SHEET

## Ductile (Spheroidal Graphite) Cast Iron

### TY Grade HD4, HD4M (GCD400, FCD400)

**1. Characteristics:** HD4 is achieved through annealing and offers excellent ductility and superior machinability with impact strength.

this grade's has surface finish combined with good fatigue strength's, electrical conductivity and magnetic permeability.

**2. Conforms:** EN 16482(continuous cast iron bars), JIS G-5502 FCD400-18, ASTM A536-84 Grade 60-40-18, EN-1563-GJS-400-18

**3. Size Range:**

STANDARD SIZE AND SUPPLY.		
Concast (HD4)	Round	Ø25mm ~ Ø260mm
	Square & Rectangle	■40×50 ~ ■205×220
Mold Cast (HD4M)	Round	Ø270mm ~ Ø510mm (proof machined)
	Square & Rectangle	■200×250 ~ ■500×600
Standard Sizes	Length	· Continuous Cast Iron Bar: 3m(3000mm) · Metal Mold Cast: max. 1m(1000mm)
	Supply condition	· As-cast. Cut. · Round: turned and peeled · Square&Rectangle: milled (proof machined)
Non-Standard Sizes		other lengths available

**4. Chemistry: Typical Ranges:(Analysis at the discretion of T-Y)**

Color Code

ELEMENT	TYPICAL(%)
Carbon	2.90~3.90
Silicon	2.20~3.40
Manganese	max. 1.00
Phosphorous	max. 0.10
Sulfur	max. 0.02
Magnesium	max. 0.065



**5. Mechanical Properties:** (Taken from mid-radius of cast bar, not separately cast test bar)

Material grade	Diameter(D) (mm)	0.2% Proof Stress min. (N/mm <sup>2</sup> )	Tensile (UTS) min. (N/mm <sup>2</sup> )	Elongation min. (%)	BHN 3000kgf (10mm dia Ball)
HD4	D < 60	250	400	18	max. 180
	60 < D ≤ 120	250	390	15	
	120 < D ≤ 400	240	370	12	

**6. Microstructure:** Contains Type V & VI nodular(spheroidal) graphite in accordance with ISO 945

- Nodularity: ≥80%
- Nodular Count(approximately): Rim Zone ≥200 nodules/mm<sup>2</sup>  
Core Zone ≥80 nodules/mm<sup>2</sup>
- Ferritic/Pearlitic: ≥90% ferritic, ≤10% pearlite (core matrix)

**7. Application:**

Cylinder Blocks, Manifolds, Rotors, Valves, Gears, Pulleys  
Rotary Screws, Blank Molds, Housings and so on.

