

The S.G. family iron has several interesting properties. These are given below:



High Strength
(In some cases even greater than steel)



Lower Density
than that of steel



Excellent Machinability



Superior Surface Lubrication Properties



Better Damping Characteristics



Adequate Ductility



Superior Castability

Equivalent Grades of **Gray Iron, Ductile Iron or Sg Iron**



This is a comparison table for the ductile iron grades of various standards, including **ISO, GB, ASTM, DIN, EN, JIS**.

Country	Standard	Equivalent Grades of Ductile iron (SG Iron, Nodular Graphite Iron)						
ISO	ISO 1083	400-15 400-18	450-10	500-7	600-3	700-2	800-2	900-2
China	GB 9439	QT400-18	QT450	QT450	QT450	QT450	QT450	QT450
USA	ASTM A536	60-40-18	60-42-10 65-45-12	70-50-05	80-55-06 80-60-03	100-70-03	120-90-02	-
Germany Austria	DIN 1693	GGG40	-	GGG50	GGG60	GGG70	GGG80	
European	EN 1563	EN-GJS-400-15 EN-GJS-400-18	EN-GJS-450-10	EN-GJS- 500-7		EN-GJS-700-2	EN-GJS-800-2	
Japan	JIS G5502	FCD400	FCD450	FCD500	FCD600	FCD700	FCD800	-
Italy	UNI 4544	GS370-17	GS400-12	GS500-7	GS600-2	GS700-2	GS800-2	-
France	NF A32-201	FGS370-17	FGS400-12	FGS500-7	FGS600-2	FGS700-2	FGS800-2	-
UK	BS 2789	400/17	420/12	500/7	600/7	700/2	800/2	900/2
India	IS 1865	SG370/17	SG400/12	SG500/7	SG600/3	SG700/2	SG800/2	-
Spain	UNF	FGE38-17	FGE42-12	FGE50-7	FGE60-2	FGE70-2	FGE80-2	-
Belgium	NBN 830-02	FNG38-17	FNG42-12	FNG50-7	FNG60-2	FNG70-2	FNG80-2	-
Australia	AS 1831	300-17 400-12	-	500-7	600-3	700-2	800-2	-
Sweden	SS 14 07	0717-02	-	0727-02	0732-03	0737-01	0864-03	-
Norway	NS11 301	SIK-400.3 SIK-400	-	SIK-500	SIK-600	SIK-700	SIK-800	

SG Iron Specification **As per EN1563**



Material Designation	Tensile Strength (min)N/mm2	0.2% Proof Stress (min) N/mm2	Elongation (min)%	Minimum impact resistance values (in j), see note A						Predominant Structure
				At room temperature (23 +/-5) degrees C		At (-20 +/- 2) degrees C		At (-40 +/- 2) degrees C		
				Mean value from 3 tests	Individual Value	Mean value from 3 tests	Individual Value	Mean value from 3 tests	Individual Value	
EN-GJS-350-22-LT	350	220	22	—	—	—	—	12	9	Ferrite
EN-GJS-350-22-RT	350	220	22	17	14	—	—	—	—	Ferrite
EN-GJS-350-22	350	220	22	—	—	—	—	—	—	Ferrite
EN-GJS-400-18-LT	400	240	18	—	—	12	9	—	—	Ferrite
EN-GJS-400-18-RT	400	250	18	14	11	—	—	—	—	Ferrite
EN-GJS-400-18	400	250	18	—	—	—	—	—	—	Ferrite
EN-GJS-400-15	400	250	15	—	—	—	—	—	—	Ferrite
EN-GJS-450-10	450	310	10	—	—	—	—	—	—	Ferrite
EN-GJS-500-7	500	320	7	—	—	—	—	—	—	Ferrite
EN-GJS-600-3	600	370	3	—	—	—	—	—	—	Pearlite - Ferrite
EN-GJS-700-2	700	420	2	—	—	—	—	—	—	Pearlite - Ferrite
EN-GJS-800-2	800	480	2	—	—	—	—	—	—	Pearlite
EN-GJS-900-2	900	600	2	—	—	—	—	—	—	Pearlite or Tempered Martensite

Chemical Composition of **SG Cast Iron**



USA	Germany	ISO	C%	Si%	Mn%	P%	S%	Mg%	Cu%	Sn%
60-40-18	GGG-40	400-18	3.40-3.90	2.20-2.80	0.20-0.40	0.030-0.050	0.010-0.025	0.030-0.060	—	—
60-45-12	GGG-40	450-10	3.40-3.80	2.20-2.90	0.20-0.40	0.030-0.050	0.010-0.025	0.030-0.060	—	—
70-50-05	GGG-50	500-7	3.30-3.80	2.00-2.90	0.20-0.60	0.030-0.050	0.010-0.025	0.030-0.060	<0.4	—
80-60-03	GGG-60	600-3	3.00-3.70	2.20-2.80	0.30-0.60	0.030-0.050	0.010-0.025	0.030-0.060	0.30-0.60	—
100-70-03	GGG-70	700-2	3.50-3.90	2.00-2.60	0.30-0.60	0.030-0.050	0.010-0.025	0.030-0.060	0.30-0.70	—

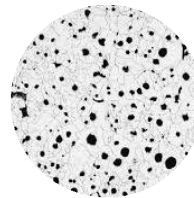
Gray Cast Iron Microstructure

Predominantly
"A" Type

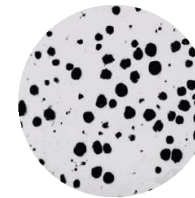


Image Analyser

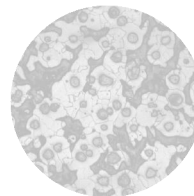
SG Iron With Various Matrix



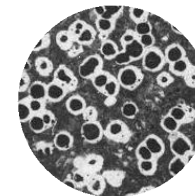
Ferritic
Matrix



Nodularity
above 90%



More than 35%
Pearlite.



More than 80%
Pearlite



Thank You!