



Ductile Iron in DIN 1693

Cast Iron with nodular graphite (GGG) is an iron carbon casting material having the carbon component present as graphite which exists almost exclusively in a largely nodular form. Ductile iron is most popular metal material. www.castingquality.com

Reference Casting Standards:

DIN 1693 part 1: Cast Iron with Nodular Graphite Unalloyed and Low Alloy Grades.

DIN 1693 Part 2: Cast Iron with Nodular Graphite Unalloyed and Low Alloy Grades Properties in Cast on Test Piece

Ductile Iron castings can be produced in Casting Quality Industrial:

- n Sand Casting
- n Shell Casting
- n Lost Form Casting
- n Centrifugal casting



Ductile iron standard grades in DIN 1693 Part 1:

Grade		Guaranteed Properties from separately parts			Reference data
Symbol	Material Number	Tensile Strength, N/mm2, min	0,2% proof Strength, N/mm2, min	Elongation %, min	Structure
GGG-40	0.7040	400	250	15	Predominantly Ferritic
GGG-50	0.7050	500	320	7	Ferritic/Pearlitic
GGG-60	0.7060	600	380	3	Pearlitic/Ferritic
GGG-70	0.7070	700	440	2	Predominantly pearlitic
GGG-80	0.7080	800	500	2	Pearlitic

Ductile Iron Grades with guaranteed impact values in DIN 1693 Part 1:

Grade		Guaranteed Properties from separately parts			Impact Value (J)	
Symbol	Material Number	Tensile Strength, N/mm2, min	0,2% proof Strength, N/mm2, min	Elongation n %, min	Average from 3 pc	Individual Value
GGG-35.3	0.7033	350	220	22	14 at -40 °C	11 at -40 °C
GGG-40.3	0.7043	400	250	18	14 at -40 °C	11 at -40 °C



Properties in cast-on test pieces, in DIN 1693 Part 2:

Grade in DIN1693 part 1		Ruling Wall thickness of the casting, mm	Thickness of Cast-on test piece, mm	Guaranteed Properties from separately parts			Reference data
Symbol	Material Number			Tensile Strength, N/mm ² , min	0,2% proof Strength, N/mm ² , min	Elongation %, min	Structure
GGG-40.3	0.7043	30-60	40	390	250	15	Predominantly Ferritic
		>60-200	70	370	240	15	
GGG-40	0.7040	30-60	40	390	250	15	Predominantly Ferritic
		>60-200	70	370	240	12	
GGG-50	0.7050	30-60	40	450	300	7	Ferritic
		>60-200	70	420	290	5	Pearlitic
GGG-60	0.7060	30-60	40	600	360	2	Pearlitic
		>60-200	70	550	340	1	Ferritic
GGG-70	0.7070	30-60	40	700	400	2	Predominantly pearlitic
		>60-200	70	650	380	1	

Note: GGG 40.3 also have impact requirement:

Grade in DIN1693 part 1		Ruling Wall thickness of the casting, mm	Thickness of Cast-on test piece, mm	Impact Value at -20 °C	
Symbol	Material Number			Average from 3 pieces	Individual Value
GGG-40.3	0.7043	30-60	40	14 J	11 J
		>60-200	70	12 J	9 J

No any requirement about chemistry in all Standards, but we will suggest the chemistry as our experience in Casting industry:

DIN Grade	Chinese Grade	C	Si	Mn	P ≤	S ≤	Mg	RE	Others
GGG40	QT400-15	3.5-3.6	3.0-3.2	0.5	0.07	0.02	0.04	0.02	-
GGG50	QT500-7	3.6-3.8	2.5-2.9	0.6	0.08	0.025	0.03-0.05	0.03-0.05	-
GGG60	QT600-3	3.6-3.5	2.0-2.4	0.5-0.7	0.08	0.025	0.035-0.05	0.025-0.045	-
GGG70	QT700-2	3.7-4.0	2.3-2.6	0.5-0.8	0.08	0.02	0.035-0.065	0.035-0.065	Mo 0.15-0.4 Cu 0.4-0.8
GGG80	QT800-2	3.7-4.0	2.5	0.5	0.07	0.03	-	-	Mo 0.039 Cu 0.82

Ductile Iron Heat treatment process: www.castingquality.com

Generally ductile iron will be supplied in casting condition if no special requirement. But to improve iron property, the heat treatment process can be chosen based on different microstructure and final application, such as Annealing, Tempering, Quenching and Normalizing. Pls contact with Casting Quality for details.

Ductile Iron Typical Casting Application



- I GGG40: good weld able property and machining property; it's the popular iron for machinery, valve, truck, railway, gearbox, flywheels etc.
- I GGG50: better strength, mostly used in engineer, , railway, motor etc.
- I GGG60: little better abrasive property.
- I GGG70/GGG80: high strength and abrasive property. It will be used in high strength application.

Similar Ductile Iron Casting Grades: www.castingquality.com

Index	Country	Ductile Iron Grade							
1	China	QT400-15	QT400-18	QT450-10	QT500-7	QT600-3	QT700-2	QT800-2	QT900-2
2	Japanese	FCD400	—	FCD450	FCD500	FCD600	FCD700	FCD800	—
3	USA		60-40-18	65-45-12	70-50-05	80-60-03	100-70-03	120-90-02	—
4	Russia	B440	—	B445	B450	B460	B470	B480	B4100
5	Germany	GGG40	—	—	GGG50	GGG60	GGG70	GGG80	—
6	Italy		GS370-17	GS400-12	GS500-7	GS600-2	GS700-2	GS800-2	—
7	France	FGS400-15	FGS400-18	FGS450-10	FGS500-7	FGS600-3	FGS700-2	FGS800-2	FGS900-2
8	England		400/18	450/10	500/7	600/3	700/2	800/2	900/2
9	Poland		ZS3817	ZS4012	ZS4505/500-2	ZS6002	ZS7002	ZS8002	ZS9002
10	India		SG370/17	SG400/12	SG500/7	SG600/3	SG700/2	SG800/2	—
11	Romania		—	—	—	—	FGN70-3	—	—
12	Spanish		FGE38-17	FGE42-12	FGE50-7	FGE60-2	FGE70-2	FGE80-2	—
13	Belgium		FNG38-17	FNG42-12	FNG50-7	FNG60-2	FNG70-2	FNG80-2	—
14	Australia		300-17	400-12	500-7	600-3	700-2	800-2	—
15	Sweden		0717-02	—	0727-02	0732-03	0737-01	0864-03	—
16	Hungary		GöV38	GöV40	GöV50	GöV60	GöV70	—	—
17	Bulgaria	400-12	380-17	450-5	500-2	600-2	700-2	800-2	900-2
18	ISO	400-15	400-18	450-10	500-7	600-3	700-2	800-2	900-2
19	COPANT		—	FMNP45007	FMNP55005	FMNP65003	FMNP70002	—	—
20	Finland		GRP400	—	GRP500	GRP600	GRP700	GRP800	—
21	Holland		GN38	GN42	GN50	GN60	GN70	—	—
22	Luxemburg		FNG38-17	FNG42-12	FNG50-7	FNG60-2	FNG70-2	FNG80-2	—
23	Austria		SG38	SG42	SG50	SG60	SG70	—	—
24	Europa-Norm	En-GJS-400-15	En-GJS-400-18	En-GJS-450-10	En-GJS-500-7	En-GJS-600-3	En-GJS-700-2	En-GJS-800-2	En-GJS-900-2

As a professional casting manufacture, Qingdao Casting Quality Industrial pay much attention to the quality and technology, our products are much more casting and forging parts. We are mainly do Sand Casting, Investment Casting (Lost Wax Casting or Precision Grade Casting) and Die Casting .Today, its products are marketed globally through many countries.

Our Services

Casting Quality focus on Metal Parts industry, we provide professional service in Metal Casting field.



- I Sand Casting
- I Investment Casting
- I Shell Casting
- I CNC Machining
- I CAD Design
- I Tools/Mold Design

Many buyers from all over the world purchase products from China. But do you know the quality of products in China? Maybe you only pay the surface and price, but the inner quality is lost .

Housing Casting Design in Solidworks

What makes Casting Quality the best?

Innovation

Our engineers are more than just designers....they're pioneers. Our team use CAD/CAM to do the simulation of casting parts .Through the advanced technology, we can know the weight and structure . We also visited so many factories to know their difference and improve our products every year.

Quality

We're obsessed with quality. Casting Quality constantly strives to exceed our customers' expectations in durability and performance. In fact, we will control the whole process from the original material to the finished parts , include the technology .Uniquely-designed Quality Control System focuses on ensuring four product goals: 1) Eligible Chemistry , 2) Hardness 3) Property and 4) Affordable Pricing. The result is the best casting products value in the industry.

Service

We're in Qingdao,China, It has convenient transportation of road and sea. Courteous service is part of who we are, and we do it better than anyone in the industry. With Casting Quality you can expect friendly, knowledgeable, and prompt customer service.

Fulfillment

Shipping orders complete and on-time is of paramount importance to our customers. We will count the delivery date and result before accept your order. Casting Quality consistently ranks as one of the best in speed of delivery and fill rates.

SERVICE IN QINGDAO CASTING QUALITY INDUSTRIAL

- I SAND CASTING
- I INVESTMENT CASTING
- I SHELL CASTING
- I PERMANENT MOLD CASTING
- I CNC MACHINING
- I CAD/CAM DESIGN