GGG-50 (EN 0.7050) Ductile Cast Iron Casting Material

Introduction

GGG-50 is a ductile cast iron grade covered by DIN 1693-1, DIN 1693-2. Typical family applications include gear and transmission components, hubs, brackets, machine housings and pump-related castings.

Manufacturing Process

Sand Casting
Shell Molding Casting
Lost Foam Casting

Equivalent Materials

Standard	Material Grade
NBN 830-02	FNG50-7
NS11 301	SJK-500
NF A32-201	FGS500-7
EN 1563	EN-GJS-500-7
JIS G5502	FCD500
UNI 4544	GS500-7
AS 1831	500-7
ISO 1083	ISO 1083/JS/500-7/S
SS 14 07	0727-02
UNF	FGE50-7
BS 2789	500/7
IS 1865	SG500/7
GB 1348	QT500-7
ASTM A536	70-50-05

Reference Standards

Standard	Standard Title	Edition	Specification	Identifier
DIN 1693-1	Cast Iron with Nodular Graphite — Unalloyed and Low Alloy Grades	1973-10	GGG-50	—
DIN 1693-2	Cast Iron with Nodular Graphite — Unalloyed and Low Alloy Grades — Properties in Cast-on Test Piece	1977-10	GGG-50	—

Physical Properties

Property	Value / Unit	Note	Source
Density	7.2 kg/dm3	Approximate density for weight calculations, not a guaranteed density limit	DIN 1693-1

Chemical Composition

DIN 1693-1–1973-10

No specified chemical composition limits in DIN 1693-1

DIN 1693-2–1977-10

N/A

Heat Treatment

DIN 1693-1–1973-10

Supplied as cast or heat-treated; no mandatory numerical heat-treatment cycle specified.

DIN 1693-2–1977-10

N/A

Mechanical Properties

Core Mechanical Properties

DIN 1693-1 — 1973-10 · Table 1 — Normative

Property	Separately cast test piece
Tensile Strength	>= 500 N/mm2
Yield Strength (Rp0.2)	>= 320 N/mm2
Elongation	>= 7 %

Separately cast U or Y test piece; tensile specimen per DIN 50125; A5 elongation

Conditions are not identical. Compare each stated condition and applicability separately.

DIN 1693-2 — 1977-10 · Table 1 — Normative

Property	Cast-on test piece
Tensile Strength	>= 450 N/mm2[1] >= 420 N/mm2[2]
Yield Strength (Rp0.2)	>= 300 N/mm2[1] >= 290 N/mm2[2]
Elongation	>= 7 %[1] >= 5 %[2]

CASTING QUALITY

DIN 50125 B14x70 tensile specimen; A5 elongation; Primarily casting weights >2000 kg and/or sections 50–200 mm; other sizes need separate agreement. Table 1 specifically lists 30–60 and >60–200 mm.

DIN 1693-2 — 1977-10 · Table 3 — Informative

Property	Informative casting-location design guidance
Yield Strength (Rp0.2)	>= 290 N/mm2[3] >= 280 N/mm2[4] >= 270 N/mm2[5] >= 260 N/mm2[6]

Casting location, not separately cast or cast-on specimen; Guidance for design only; not guaranteed casting minima. At junctions use largest inscribable cylinder diameter rather than nominal wall thickness; approximately 95% probability of being exceeded.; Informative reference value; not an acceptance requirement

Notes

DIN 1693-2 · Edition 1977-10

[1] Tensile Strength/Yield Strength (Rp0.2)/Elongation: wall thickness <= 60 mm; Cast-on test piece 40 mm

[2] Tensile Strength/Yield Strength (Rp0.2)/Elongation: wall thickness <= 200 mm; Cast-on test piece 70 mm

[3] Yield Strength (Rp0.2): wall thickness <= 50 mm

[4] Yield Strength (Rp0.2): wall thickness <= 80 mm

[5] Yield Strength (Rp0.2): wall thickness <= 120 mm

[6] Yield Strength (Rp0.2): wall thickness <= 200 mm

Welding Conditions

N/A

Applications

Typical cast components in this material family include gear and transmission components, hubs, brackets, machine housings and pump-related castings. Applications include agricultural, construction and general industrial machinery. Lifting, low-temperature and pressure-retaining duties require the relevant component-specific requirements; ordinary family uses do not establish those capabilities.

CASTING QUALITY

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Casting Quality Industrial

As a professional manufacturer in China, We Casting Quality focus on Metal Parts OEM industry, and provide solutions and services in Metal Casting field as following:

Sand Casting

Investment Casting, Lost Wax process

Shell Casting

Lost Form Casting

Permanent Mold Casting

CNC Machining

CAD Design

Tools/Mold Design

Material Supplied

Cast Iron Castings (Grey Iron, Malleable Iron, Ductile Iron)

Carbon Steel and Alloy Steel Castings

Stainless Steel and Duplex Stainless Steel Castings

Aluminum Castings

Bronze and Brass Castings

Titanium and Cobalt Alloy Castings

What We Can Do

Design Ability

Our engineers will help you to improve the designs based on casting technology, then The simulation software will be processed to verify the casting pouring system. Pro/E, Solidworks, AutoCAD and ProCast are available in Casting Quality Industrial.

Saving Cost

Some manufacture processes may lead high cost. We will analyses the designs and advise the suitable methods to our customers. The best solution will be adopted.

Quality Control

From the raw material selecting to bulk production processing, all procedures will follow PPAP program if necessary. The certificates will be provided including chemistry, hardness, mechanical property or NDT testing.

Production Capacity

The max iron/steel castings can reach 30tons in weight, meanwhile the minus casting is around 1gram only.

We also have prototyping and 3D scanning ability for sample plan.

Logistic Service

The products will be delivered directly to customer’s workshop, which will save plenty of work for clients.

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