ISO1083/JS/800-2 Ductile Cast Iron Casting Material

Introduction

ISO1083/JS/800-2 is a ductile cast iron designated under ISO 1083. The standard reports pearlite or tempered martensite as a typical matrix. Typical family castings include bearing housings and pump components.

Manufacturing Process

Sand Casting
Shell Molding Casting
Lost Foam Casting

Equivalent Materials

Standard	Material Grade
NBN 830-02	FNG80-2
IS 1865	SG800/2
SAE J434	D800
EN 1563	EN-GJS-800-2
AS 1831	800-2
NF A32-201	FGS800-2
UNE 36-118	FGE80-2
BS 2789	800/2
NS11 301	SJK-800
UNI 4544	GS800-2
JIS G5502	FCD800
SS 14 07	0864-03
ASTM A536	120-90-02
DIN 1693-1	GGG-80
GB/T 1348	QT800-2

Approximate materials; not guaranteed interchangeable.

Reference Standards

Standard	Standard Title	Edition	Specification
ISO 1083	Spheroidal graphite cast irons — Classification	2018	ISO1083/JS/800-2

Physical Properties

Property	Value	Applicable Conditions
Density	7.2 kg/dm3	Room temperature unless otherwise specified
Elastic Modulus	176 GN/m2	Room temperature unless otherwise specified
Poisson Ratio	0.275	Room temperature unless otherwise specified
Thermal Conductivity	31.1 W/(m·K)	Test temperature: 300 °C
Specific Heat	515 J/(kg·K)	Temperature range: 20–500 °C
Thermal Expansion	12.5 um/(m·K)	Temperature range: 20–400 °C
Electrical Resistivity	0.54 uohm·m	Room temperature unless otherwise specified
Hysteresis Loss	2700 J/m3	Hysteresis loss at B = 1 T; Room temperature unless otherwise specified
Matrix Structure	pearlite or tempered martensite	
Maximum Magnetic Permeability	501 uH/m	Room temperature unless otherwise specified

Sources: ISO 1083:2018

Matrix Structure: Typical structure.

Informative values; not mandatory acceptance limits.

Chemical Composition

Not Available

Heat Treatment

ISO 1083–2018

Not Available

Mechanical Properties

Primary Mechanical Properties

ISO 1083 — 2018

Condition: t <= 30 mm

Property	Requirement
Yield Strength (Rp0.2)	>= 480 MPa
Tensile Strength	>= 800 MPa

Property	Requirement
Elongation	>= 2 %

Separately cast, cast-on or side-by-side cast samples
Values apply to sand moulds or moulds of comparable thermal behaviour
alternative processes are subject to amendments agreed in the order.
Elongation: Elongation values determined from L0 = 5 d
Elongation: other gauge lengths see 9.1 and Annex B.

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Condition: t <= 30 mm
Informative

Property	Value
Yield Strength (Rp0.2)	>= 460 MPa
Tensile Strength	>= 780 MPa
Elongation	>= 2 %

test pieces machined from samples cut from castings
Informative reference value
not an acceptance requirement
Elongation: For elongation results, the reference gauge length is L0 = 5 d.

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Informative

Property	Value
Shear Strength	720 MPa
Compressive Strength	1150 MPa

Room temperature unless otherwise specified.
Informative reference value
not an acceptance requirement

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Informative

Property	Value
Tensile Strength	800 MPa

specimens diameter <=25 mm from casting
relevant wall thickness <=30 mm
Informative reference value
not an acceptance requirement

Additional Mechanical Properties

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Other Mechanical Properties

Informative

Property	Value
Torsional Strength	720 MPa

Room temperature unless otherwise specified.

Informative reference value

not an acceptance requirement

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Fatigue Properties

Informative

Property	Value
Reversed Tension Compression Fatigue Strength	272 MPa
Reversed Tension Compression Fatigue Ratio	0.34
Pulsating Tension Fatigue Strength	381 MPa
Reversed Torsional Fatigue Strength	240 MPa
Reversed Torsional Fatigue Ratio	0.30
Rotating Bending Fatigue Strength	312 MPa
Rotating Bending Fatigue Ratio	0.39
Notched Rotating Bending Fatigue Strength	192 MPa
Notched Rotating Bending Fatigue Ratio	0.24

specimens diameter <=25 mm from casting

relevant wall thickness <=30 mm

Reversed Tension Compression Fatigue Strength; Reversed Tension Compression Fatigue Ratio; Pulsating Tension Fatigue Strength; Reversed Torsional Fatigue Strength; Reversed Torsional Fatigue Ratio; Rotating Bending Fatigue Strength; Rotating Bending Fatigue Ratio: Unnotched specimen

10 million cycles and 50% failure probability.

Informative reference value

not an acceptance requirement

Notched Rotating Bending Fatigue Strength; Notched Rotating Bending Fatigue Ratio: Notched specimen with stress concentration factor Kt <= 3

Welding Conditions

Not Available

Applications

Ductile iron ISO1083/JS/800-2 belongs to the spheroidal graphite iron casting family. Typical products of the wider ductile-iron family include transmission components, hubs, brackets and housings for pumps and bearings. Examples of end-use sectors include general industrial machinery, agriculture, construction and pump equipment.

CASTING QUALITY

Last Updated: 2026-11-16

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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