QT400-18R Ductile Cast Iron Casting Material

Introduction

QT400-18R is a spheroidal graphite iron casting grade covered by GB/T 1348. Typical applications include pump housings, valve bodies, bearing supports and equipment brackets.

Manufacturing Process

Sand Casting
Shell Molding Casting
Lost Foam Casting

Equivalent Materials

Standard	Material Grade
ISO 1083	ISO1083/JS/400-18-RT
EN 1563	EN-GJS-400-18-RT

Reference Standards

Standard	Standard Title	Edition	Specification	Identifier
GB/T 1348	Spheroidal graphite iron castings	2019	QT400-18R	—

Physical Properties

N/A

Chemical Composition

No specified chemical composition limits in GB/T 1348

Heat Treatment

GB/T 1348–2019

Heat treatment may be required under agreed delivery or retesting conditions. No grade-specific heat-treatment temperature or holding schedule is prescribed.

Mechanical Properties

Core Mechanical Properties

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

GB/T 1348 — 2019 · Table 1 — Normative

Property	30 < t <= 60 mm	60 < t <= 200 mm	t <= 30 mm
Yield Strength (Rp0.2)	>= 250 MPa	>= 240 MPa	>= 250 MPa

Property	30 < t <= 60 mm	60 < t <= 200 mm	t <= 30 mm
Tensile Strength	>= 390 MPa	>= 370 MPa	>= 400 MPa
Elongation	>= 15 %	>= 12 %	>= 18 %

Common specimen condition: Separately cast, cast-on or side-by-side cast sample

Full original column conditions

30 < t <= 60 mm — Separately cast, cast-on or side-by-side cast sample · 30 < t <= 60 mm

60 < t <= 200 mm — Separately cast, cast-on or side-by-side cast sample · 60 < t <= 200 mm

t <= 30 mm — Separately cast, cast-on or side-by-side cast sample · t <= 30 mm

L0 = 5d; GB/T 228.1; Minimum prescribed value

Separately cast, cast-on or side-by-side cast sample · 30 < t <= 60 mm: wall thickness <= 60 mm

Separately cast, cast-on or side-by-side cast sample · 60 < t <= 200 mm: wall thickness <= 200 mm

Separately cast, cast-on or side-by-side cast sample · t <= 30 mm: wall thickness <= 30 mm

GB/T 1348 — 2019 · Table 2 — Normative

Property	Test window 1	Test window 2	Test window 3	Test window 4	Test window 5	Test window 6
Impact Energy	>= 14 J	>= 11 J	>= 12 J	>= 9 J	>= 14 J	>= 11 J

V-notched specimen machined from separately cast, cast-on or side-by-side cast sample; Test temperature 23 °C; Test at 23 °C; 23; 5; GB/T 229; 2 mm striker radius; Figure 6; Impact testing only when required by the purchaser (7.2.1.2); no requirement at the dashed temperatures

Test window 1: 30 < t <= 60 mm; Mean of three specimens; wall thickness <= 60 mm

Test window 2: 30 < t <= 60 mm; Minimum individual specimen; wall thickness <= 60 mm

Test window 3: 60 < t <= 200 mm; Mean of three specimens; wall thickness <= 200 mm

Test window 4: 60 < t <= 200 mm; Minimum individual specimen; wall thickness <= 200 mm

Test window 5: t <= 30 mm; Mean of three specimens; wall thickness <= 30 mm

Test window 6: t <= 30 mm; Minimum individual specimen; wall thickness <= 30 mm

GB/T 1348 — 2019 · Table C.1 — Informative

Property	30 < t <= 60 mm	60 < t <= 200 mm	t <= 30 mm
Yield Strength (Rp0.2)	>= 240 MPa	>= 230 MPa	>= 250 MPa
Tensile Strength	>= 370 MPa	>= 350 MPa	>= 390 MPa
Elongation	>= 12 %	>= 10 %	>= 15 %

Full original column conditions

30 < t <= 60 mm — Specimen cut from the casting · 30 < t <= 60 mm

60 < t <= 200 mm — Specimen cut from the casting · 60 < t <= 200 mm

t <= 30 mm — Specimen cut from the casting · t <= 30 mm

source designation QT400-18R/C; sampling position and acceptance properties subject to agreement; L0 = 5d; GB/T 228.1; Informative minimum guideline, not an unconditional acceptance requirement; Informative reference value; not an acceptance requirement

Specimen cut from the casting · 30 < t <= 60 mm: wall thickness <= 60 mm

Specimen cut from the casting · 60 < t <= 200 mm: wall thickness <= 200 mm

Specimen cut from the casting · t <= 30 mm: wall thickness <= 30 mm

Welding Conditions

N/A

Applications

Ductile iron GB/T 1348 Grade QT400-18R is used for pump housings, valve bodies, bearing supports and equipment brackets. These castings are found in fluid-handling equipment, agricultural machinery and general mechanical assemblies. Selection within this family depends on the actual component geometry and loading.

Pipes, pipe fittings and associated joints are outside this standard; pressure-retaining machinery parts require the applicable component specification and inspection requirements. For this suffix grade, retain the specified impact-test temperature and specimen conditions when selecting a component; the test temperature is not a guaranteed operating-temperature limit.

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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