CK20 Austenitic Stainless Steel Casting Material

Introduction

CK20 is a austenitic stainless steel grade specified in ASTM A351, ASTM A743 for pressure-containing cast components. Casting process options include Investment Casting, Shell Molding Casting and Sand Casting, subject to the applicable specification and component requirements.

Manufacturing Process

Investment Casting
Shell Molding Casting
Sand Casting

Equivalent Grades

N/A

Reference Standards

Standard	Standard Title	Edition	Specification	Identifier
ASTM A351	Standard Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts	03	CK20	UNS J94202
ASTM A743	Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application	03	CK20	UNS J94202

Physical Properties

N/A

Chemical Composition

Element	ASTM A351 Edition 03	ASTM A743 Edition 03
C	0.04–0.20 %	<= 0.20 %
Si	<= 1.75 %	<= 2.00 %
Mn	<= 1.50 %	<= 2.00 %
P	<= 0.040 %	<= 0.04 %
S	<= 0.040 %	<= 0.04 %
Cr	23.0–27.0 %	23.0–27.0 %
Ni	19.0–22.0 %	19.0–22.0 %
Mo	<= 0.50 %	— / Not specified

Heat Treatment

ASTM A351–03 · Heat treatment

Step	Operation	Temperature	Cooling
1	Heat treat	>= 2100 °F / >= 1150 °C	—
2	Quench or rapid cool	—	water quench or rapid cooling by other means

ASTM A743–03 · Heat treatment

Step	Operation	Temperature	Cooling
1	Heat	>= 2000 °F / >= 1093 °C[1]	—
2	Quench or rapid cool	—	water quench or rapid cooling by other means

Notes

ASTM A743 · Edition 03

[1] Heat treatment: sufficient time to heat casting to temperature

Mechanical Properties

Property	ASTM A351 Edition 03	ASTM A743 Edition 03
Tensile Strength	>= 65 ksi >= 450 MPa	>= 65 ksi[1] >= 450 MPa[1]
Yield Strength (Rp0.2)	>= 28 ksi >= 195 MPa	— / Not specified
Elongation	>= 30.0 %	>= 30 %[1]
Yield Strength	— / Not specified	>= 28 ksi[1] >= 195 MPa[1]

Notes

ASTM A743 · Edition 03

[1] Tensile Strength/Elongation/Yield Strength: Applies only when Supplementary Requirement S12 is specified; Condition: heat treatment per; separately cast keel block per S12.2 unless S12.3 agreement applies

Welding Conditions

N/A

Applications

Typical casting applications include pressure-containing cast components such as valve bodies, flanges and fittings, subject to grade-specific service requirements.

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CASTING QUALITY

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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