GX4CrNi16-4 (EN 1.4421) Martensitic Stainless Steel Casting Material

Introduction

GX4CrNi16-4 (EN 1.4421) is a martensitic stainless steel casting grade specified in EN 10293. The standard covers steel castings for general engineering uses and defines the applicable delivery conditions and engineering requirements. 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

CB6 — ASTM A743[1]

Notes

[1] Chemical comparison (similar grade reference).

Reference Standards

Standard	Standard Title	Edition	Specification	Identifier
EN 10293	Steel castings — Steel castings for general engineering uses	2015	GX4CrNi16-4	—

Physical Properties

N/A

Chemical Composition

Element	EN 10293 Edition 2015 · wt.% Cast analysis
C	<= 0.06
Si	<= 0.80
Mn	<= 1.00
P	<= 0.035
S	<= 0.020
Cr	15.50–17.50
Ni	4.00–5.50

Element	EN 10293 Edition 2015 · wt.% Cast analysis
Mo	<= 0.70
Cu	<= 0.30[1]
V	<= 0.08[1]

Notes

EN 10293 · Edition 2015

[1] Cu/V: Applies only where unspecified in unless otherwise agreed; no intentional addition except for finishing the heat.

Heat Treatment

EN 10293–2015 · +QT1

Step	Operation	Temperature	Cooling
1	: quenching	1020–1070 °C	air
2	: tempering	580–630 °C	—

EN 10293–2015 · +QT2

Step	Operation	Temperature	Cooling
1	: quenching	1020–1070 °C	air
2	: tempering	450–500 °C	—

Mechanical Properties

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

Property	EN 10293 Edition 2015 +QT1[1]	EN 10293 Edition 2015 +QT2[2]
Yield Strength (Rp0.2)	>= 540 MPa	>= 830 MPa
Tensile Strength	780–960 MPa	1000–1200 MPa
Elongation	>= 15 %	>= 10 %
Impact Energy	>= 60 J	>= 27 J

Notes

EN 10293 · Edition 2015

[1] All properties in this column; +QT1: wall thickness <= 300 mm; Test block of relevant thickness; maximum test-block wall thickness 150 mm; Room temperature; Properties apply to the casting up to the specified maximum wall thickness; above this, foreseeable lowering shall be agreed.

[2] All properties in this column; +QT2: wall thickness <= 300 mm; Test block of relevant thickness; maximum test-block wall thickness 150 mm; Room temperature; Properties apply to the casting up to the specified maximum wall thickness; above this, foreseeable lowering shall be agreed.

Welding Conditions

EN 10293–2015

Requirement	Value
Preheat	No preheat[1]
Interpass Temperature	<= 200 °C
Post-weld Heat Treatment	Same as base-material tempering temperature

Notes

EN 10293 · Edition 2015

[1] Preheat: Preheat depends on casting geometry, thickness and climatic conditions.

Applications

At the casting-family level, typical applications include machinery, automotive and railway components, agricultural equipment and mining equipment.

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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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