



GX5CrNiCu16-4 (EN 1.4525) Precipitation-Hardening Stainless Steel Casting Material

Introduction

GX5CrNiCu16-4 is a stainless steel grade specified in EN 10283 for corrosion-resistant 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
EN 10283	Corrosion resistant steel castings	2019	GX5CrNiCu16-4	—

Physical Properties

EN 10283–2019

Property	Value	Note
Density	7.8 kg/dm ³ [1]	Test at 20 °C
Specific Heat	460 J/(kg·K)[1]	Test at 20 °C
Thermal Conductivity	17.5 W/(m·K)[1]	Test at 50 °C
Thermal Conductivity	18.5 W/(m·K)[1]	Test at 100 °C
Thermal Expansion	11.8 ×10 ⁻⁶ /K[1]	Temperature range: 20–100 °C
Thermal Expansion	12.8 ×10 ⁻⁶ /K[1]	Temperature range: 20–300 °C
Thermal Expansion	13.4 ×10 ⁻⁶ /K[1]	Temperature range: 20–500 °C
Density	7.8 kg/dm ³ [2]	Test at 20 °C
Specific Heat	460 J/(kg·K)[2]	Test at 20 °C
Thermal Conductivity	17.5 W/(m·K)[2]	Test at 50 °C
Thermal Conductivity	18.5 W/(m·K)[2]	Test at 100 °C
Thermal Expansion	10.6 ×10 ⁻⁶ /K[2]	Temperature range: 20–100 °C



Property	Value	Note
Thermal Expansion	$11.3 \times 10^{-6}/K^{[2]}$	Temperature range: 20–300 °C
Thermal Expansion	$12 \times 10^{-6}/K^{[2]}$	Temperature range: 20–500 °C

Notes

EN 10283 · Edition 2019

^[1] Density/Specific Heat/Thermal Conductivity/Thermal Expansion: Delivery condition +QT1

^[2] Density/Specific Heat/Thermal Conductivity/Thermal Expansion: Delivery condition +QT2

Chemical Composition

Element	EN 10283 Edition 2019 · wt.% Cast analysis
C	≤ 0.07
Si	≤ 0.80
Mn	≤ 1.00
P	≤ 0.035
S	≤ 0.025
Cr	15.00–17.00
Ni	3.50–5.50
Mo	≤ 0.80
Cu	2.50–4.00
N	≤ 0.05
Nb	≤ 0.35
V	$\leq 0.08^{[1]}$

Notes

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^[1] V: Applies unless otherwise agreed; unspecified elements shall not be intentionally added without purchaser agreement except for finishing the heat.

Heat Treatment

EN 10283–2019 · +QT1

Step	Operation	Temperature	Cooling
1	quenching	1020–1070 °C	air or liquid



Step	Operation	Temperature	Cooling
2	tempering	560–610 °C	—

EN 10283–2019 · +QT2

Step	Operation	Temperature	Cooling
1	quenching	1020–1070 °C	air or liquid
2	tempering	460–500 °C	—

Mechanical Properties

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

Property	EN 10283 Edition 2019 +QT1 ^[1]	EN 10283 Edition 2019 +QT2 ^[2]
Yield Strength (Rp0.2)	>= 750 MPa	>= 1000 MPa
Tensile Strength	>= 900 MPa	>= 1100 MPa
Elongation	>= 12 %	>= 5 %
Impact Energy	>= 20 J ^[3]	— / Not specified

Notes**EN 10283 · Edition 2019**

^[1] All properties in this column; +QT1: wall thickness <= 300 mm; Test block; maximum thickness 150 mm; Room temperature; Yield and tensile strength also apply to the casting up to the maximum specified wall thickness.

^[2] All properties in this column; +QT2: wall thickness <= 300 mm; Test block; maximum thickness 150 mm; Room temperature; Yield and tensile strength also apply to the casting up to the maximum specified wall thickness.

^[3] Impact Energy; +QT1: KV2 as specified in

Welding Conditions**EN 10283–2019**

Requirement	Value
Preheat	20–100 °C ^[1]
Interpass Temperature	<= 120 °C
Post-weld Heat Treatment	Tempering at the same temperature as the base material ^[2]
Post-weld Heat Treatment	Tempering at the same temperature as the base material ^[3]

Notes



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

^[2] Post-weld Heat Treatment: minor welds

^[3] Post-weld Heat Treatment: major welds

Applications

Typical casting applications include high-strength cast structural components and actuators.

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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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