



Stainless Steel GX12Cr12 (1.4011)

GX12Cr12 is a one popular martensitic corrosion resistant stainless steel for casting purposes. GX12Cr12 is defined in standards EN 10283 and ISO 11972, with the EN designation being 1.4011. GX12Cr12 (EN 1.4011) is the same stainless steel material as SS410 with high strength.

Casting Methods in Casting Quality Industrial:

- Sand Casting
- Investment Casting (Lost Wax Casting, Precision Casting)

Reference Casting Standards:

EN 10283: 2019 Corrosion resistant steel castings

ISO 11972:2023 specifies cast steels for general corrosion-resistant applications.

GX12Cr12 (EN 1.4011) Equivalent Stainless Steel Grade:

American: ASTM A217 CA15
American: ASTM A487 CA15
American: ASTM A743 CA15 (J91150)
American: ASTM A240 SS410
American: ASTM A182 F6a
American: ASTM A276 SS410
Japanese: JIS 5121 SCS1
Chinese: GB/T 2100 ZG1Cr13
UK: BS3100 410C21
EN 10088-3: X12Cr13 (EN 1.4006)

GX12Cr12 (EN 1.4011) Physical Properties:

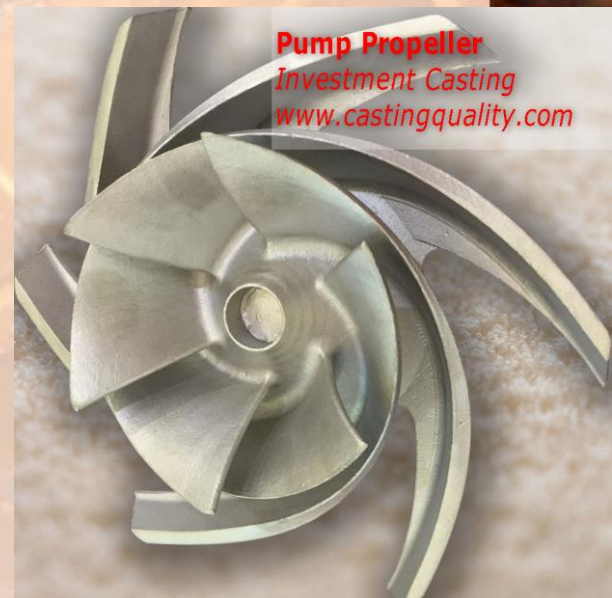
Density at 20°C, kgs/dm ³ :	7.70
Mean thermal expansion, 10 ⁻⁹ k ⁻¹ (20°C to 100°C):	10.5
Thermal conductivity, W/(m.k) at 50°C:	25
Specific heat, j/(kg.k) at 20°C:	440
Magnetic properties:	slight magnetic

GX12Cr12 (EN 1.4011) Heat treatment process:

Quenching + Tempering (+QT)
Austenitize at 950-1050°C temperature and air cooling; tempered at 650-750°C, air cooling

GX12Cr12 (EN 1.4011) BENEFITS

- Corrosion and pitting resistance
- Better for abrasive applications
- Higher strength than austenite stainless steel
- Cheap than austenite stainless steel, low cost.
- Better resistance to embrittlement



Pump Propeller
Investment Casting
www.castingquality.com



GX12Cr12 (EN 1.4011) Welding conditions:

GX12Cr12 need a preheated at 250°C-300°C, max interpass temper is 350°C, and the Martensitic stainless steel shall to be re-tempered after welding repairing

GX12Cr12 (EN 1.4011) Chemical requirements and Mechanical Property

Standard	EN 10283	ISO 11972
Grade	GX12Cr12	GX12Cr12
EN number	1.4011	1.4011
Chemical requirements		
C max	0.15	0.15
Si max	1.00	1.00
Mn max	1.00	1.00
P max	0.035	0.035
S max	0.025	0.025
Cr	11.50-13.50	11.50-13.50
Mo	0.50	0.50
Ni	1.00	1.00
Cu max	-	-
N max	-	-
Mechanical Property		
Thickness, mm	150	150
Tensile Mpa, min	620	620
0.2% proof Mpa, min	450	450
1% proof Mpa, min	-	-
Elongation, %, min	15	15
Impact Kv,J, min	20	20
Hardness, max	223HB(ASTM A487)	241HB(ASTM A743)

GX12Cr12 (EN 1.4011) Typical Casting Application: it's the most popular stainless steel.

- Pump industry include impeller, casing.
- Valve disc or stem.
- Machinery spare part
- Construction industry
- Food machinery, propeller





GX12Cr12 (EN 1.4011) vs X12Cr13 (EN 1.4006) vs CA15 vs SS410

- Casting material has similar chemistry. Only the SS410 in ASTM A240 require carbon content.
- SS4100 in ASTM A240 is plate material, it has low strength requirement.
- ASTM A743 and A240 have hardness requirement, but EN standard don't indicate it.

Standard	EN 10283	EN 10088-3:	ASTM A743	ASTM A240
Grade	GX12Cr12	X12Cr13	CA15	SS410
EN / UNS	1.4011	EN 1.4006	J91150	S41000
Chemical requirements				
C, max	0.15	0.15	0.15	0.08-0.15
Si, max	1.00	1.00	1.50	1.00
Mn, max	1.00	1.00	1.00	1.00
P, max	0.035	0.035	0.040	0.040
S, max	0.025	0.025	0.040	0.030
Cr	11.50-13.50	11.50-13.50	11.50-14.0	11.50-13.5
Mo, max	0.50	0.50	0.50	-
Ni	1.00	1.00	1.00	0.75
Cu, max	-	-	-	-
N	-	-	-	-
Mechanical Property				
Thickness, mm	150	150	-	-
Tensile Mpa, min	620	620	620	450
0.2% proof Mpa, min	450	450	450	205
1% proof Mpa, min	-	-	-	-
Elongation, %,min	15	15	18	20
Impact Kv,J, min	20	20	Reduction 30%	-
Hardness, HB, max	-	-	241HB	217HB



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:

1. **Sand Casting**
2. **Investment Casting, Lost Wax process**
3. **Shell Casting**
4. **Lost Form Casting**
5. **CNC Machining**
6. **CAD Design**
7. **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 analyze 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 1 gram 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.

Contact with Us Immediately

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