



Stainless Steel GX2CrNiMo19-11-2 (EN 1.4409)

GX2CrNiMo19-11-2 is a popular austenitic stainless steel for casting purposes; it is an austenitic corrosion-resistant casting steel. GX2CrNiMo19-11-2 is defined in standards EN 10213, EN 10283, and ISO 11972, with the EN designation being 1.4409. In fact, GX2CrNiMo19-11-2 (EN 1.4409) is the same stainless steel material as G-X2CrNiMo18-10 (1.4404) in DIN 17445 and SS316L.

Casting Methods in Casting Quality Industrial:

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

Reference Casting Standards:

EN 10213:2007+A1:2016 Steel castings for pressure purposes

EN 10283: 2019 Corrosion resistant steel castings

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

DIN 17445:1984 Stainless steel castings

GX2CrNiMo19-11-2 (EN 1.4409) Equivalent Stainless Steel Grade:

American: ASTM A351 CF3M (J92800)

American: ASTM A743 CF3M (J92800)

American: ASTM A744 CF3M (J92800)

American: ASTM A297 CF3M (J92800)

Japanese: JIS 5121 SCS16

Chinese: GB/T 12230 CF3M;

GB/T 2100 ZG03Cr19Ni11Mo2

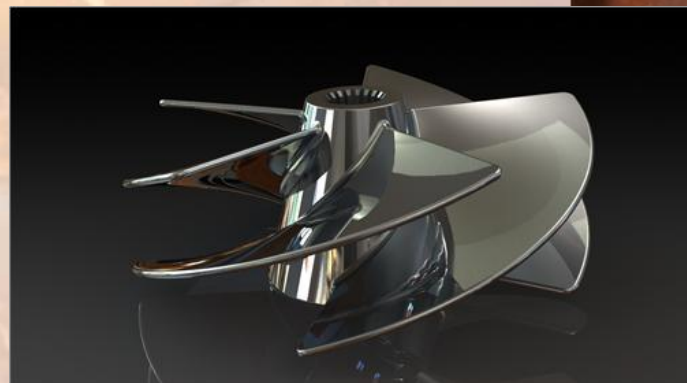
France: AFNOR Z7CND17-12-02

UK: BS3100 316C12LT196

Korea: KS D4103 SCS16

EN 10088-3: G-X2CrNiMo18-10 (EN 1.4404)

SS316L



GX2CrNiMo19-11-2 (EN 1.4409) Physical Properties:

Density at 20°C, kgs/dm ³ :	7.90
Mean thermal expansion, 10 ⁻⁹ k ⁻¹ (20°C to 100°C):	15.8
Thermal conductivity, W/(m.k) at 50°C:	14.5
Specific heat, j/(kg.k) at 20°C:	530
Magnetic properties:	none to slight magnetic

GX2CrNiMo19-11-2 (EN 1.4409) Heat treatment process:

Solution annealing + water quenching (+AT)

Heat to 1050-1150°C for sufficient time to heat casting uniformly to temperature and water quench, or depending on thickness, accelerated air cooling.



GX2CrNiMo19-11-2 (EN 1.4409) BENEFITS

- Corrosion and pitting resistance
- Better for abrasive applications
- Higher strength than standard stainless steel
- Improved ductility and weldability
- Better resistance to embrittlement

GX2CrNiMo19-11-2 (EN 1.4409) Welding conditions:

No Preheated, no post weld heat treatment required.

GX2CrNiMo19-11-2 (EN 1.4409) Typical Casting Application: it's the most popular stainless steel.

- Pump industry, valves, pipe fittings.
- Machinery spare part
- Automobile industry
- Food industry
- Construction industry

GX2CrNiMo19-11-2 (EN 1.4409) Chemical requirements and Mechanical Property

Standard	EN 10213	EN 10283	ISO 11972	EN 10088-3	DIN 17445
Grade	GX2CrNiMo19-11-2	GX2CrNiMo19-11-2	GX2CrNiMo19-11-2	X5CrNiMo17-12-2	G-X2CrNiMo18-10
EN number	1.4409	1.4409	1.4409	1.4404	1.4404
Chemical requirements					
C max	0.03	0.03	0.07	0.03	0.03
Si max	1.50	1.50	1.50	1.00	1.50
Mn max	2.0	2.0	2.00	2.00	1.50
P max	0.035	0.035	0.035	0.045	0.045
S max	0.025	0.025	0.025	0.030	0.030
Cr	18.0-20.0	18.0-20.0	18.0-20.0	16.5-18.5	17.0-20.0
Mo	2.0-2.5	2.0-2.5	2.0-2.5	2.0-2.5	2.0-3.0
Ni	9.0-12.0	9.0-12.0	9.0-12.0	10.0-13.0	10.0-13.0
Cu max	0.50	-	-	-	-
N max	0.20	0.20	0.2	0.11	-
Mechanical Property					
Thickness, mm	150	150	150	160	-
Tensile Mpa, min	440-640	440	440	500-700	440-640
0.2% proof Mpa, min	-	195	195	200	185
1% proof Mpa, min	220	220	-	235	-
Elongation, %, min	30	30	30	Long 45 Tr 45	20
Impact Kv,J, min	80	80	80	Long 100 Tr 60	60
Hardness	-	-	-	215HB max	130-200 HB



GX2CrNiMo19-11-2 (EN 1.4409) vs 1.4404 vs SS316L vs CF3M

- SS316 has low Si content.
- CF3M has big range for Cr content.
- SS316L and 1.4404 has high Cr content.

Standard	EN 10213	EN 10088-3	ASTM A240	ASTM A351
Grade	GX2CrNiMo19-11-2	X5CrNiMo17-12-2	SS316L	CF3M
EN / UNS	1.4409	1.4404	S31603	J92800
Chemical requirements				
C, max	0.03	0.03	0.03	0.03
Si, max	1.50	1.00	0.75	1.50
Mn, max	2.0	2.00	2.00	1.50
P, max	0.035	0.045	0.045	0.040
S, max	0.025	0.030	0.030	0.040
Cr	18.0-20.0	16.5-18.5	16.0-18.0	17.0-21.0
Mo, max	2.0-2.5	2.0-2.5	2.0-3.0	2.0-3.0
Ni	9.0-12.0	10.0-13.0	10.0-14.0	9.0-13.0
Cu, max	0.50	-	-	-
N	0.20	0.11	0.10	-
Mechanical Property				
Thickness, mm	150	160	-	-
Tensile Mpa, min	440-640	500-700	485	485
0.2% proof Mpa, min	-	200	170	205
1% proof Mpa, min	220	235	-	-
Elongation, %,min	30	Long 45 Tr 45	40.0	30
Impact Kv,J, min	80	Long 100 Tr 60	-	-
Hardness, HB, max	-	215HB max	217HB	-

Mechanical properties

ReH Minimum yield strength / Mindestwert der oberen Streckgrenze / Limite d elasticite minimale



Rm	Tensile strength / Zugfestigkeit / Resistance a la traction
A	Minimum elongation / Mindestwert der Bruchdehnung / Allongement minimal
J	Notch impact test / Kerbschlagbiegeversuch / Essai de flexion par choc

Heat treatment conditions

- +A Soft annealed
- +AC Annealed to achieve spheroidization of the carbides
- +AR As rolled
- +AT Solution annealed
- +C Cold drawn / hard
- +CR Cold rolled
- +FP Treated to ferrite-pearlite structure and hardness range
- +I Isothermal annealing
- +LC Cold drawn / soft
- +M Thermo mechanical rolling
- +N Normalized
- +NT Normalized and tempered
- +P Precipitation hardened
- +PE Peeled
- +QA Air quenched and tempered
- +QL Liquid quenched and tempered
- +QT Quenched and tempered
- +S Treated to improve shearability
- +SH As rolled and turned
- +SR Cold drawn and stress relieved
- +T Tempered
- +TH Treated to hardness range
- +WW Warm worked
- +U Untreated



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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