Hastelloy C-22 | Alloy C-22 | W. Nr. 2.4602Chemical Compositions-Data Sheet

NC Alloys is Certified to ISO 9001

HASTELLOY® C22® alloy
belongs to the group of highly corrosion-resistant nickel-chromium-molybdenum tungsten alloys. The material is characterized by excellent resistance to oxidizing and reducing media, even at elevated temperatures.

HASTELLOY® C-22® offers good resistance to wet media (e.g., sulfuric acid, phosphoric acid, nitric acid, chlorine gas, acid mixtures of sulfuric acid and oxidizing acids with chloride ions).

In the presence of strong oxidizing agents such as iron (III) and copper (II) chlorides, chlorine, formic acid, acetic acid, seawater, and other salt solutions, the use of this material is recommended.

A special feature of this alloy is its high resistance to crevice, pitting, and stress corrosion cracking at elevated temperatures under oxidizing and reducing conditions.

Due to its good thermal stability, HASTELLOY® C-22® alloy can usually be used in the welded condition without subsequent heat treatment.

Typical application

- Environmental technology (e.g., agitators, heat exchangers, fans, linings, and pipelines as well as spray systems)
- Exhaust gas cleaning systems for waste incineration plants and power plants (e.g., flaps, gate valves, and measuring probes)
- Wastewater treatment systems (e.g., pipelines, evaporation plants, and crystallizers)
- Chemical engineering: plants for the production of chlorine gas and hydrogen chloride (e.g., shut-off devices, gate valves, pipelines, and centrifuges).
- Chlorine bleach systems (e.g., pipelines, measuring systems).

Please get further information under:
https://www.ncalloys.com/alloys/hastelloy/hastelloy-c-22/

Specifications

DIN-Code	NiCr21Mo14W
Material number	2.4602
VdTÜV material sheet	479
UNS	N06022[1]
DIN	17744[1], 17550[2], 17752[4]
ASTM	B 575[2], B 574[4], B 564[5], B 619[3], B 622[3], B 626[3], B 366[6], B 462[6]
ASME Vessel Code	SB 575[2], SB 574[4], SB 564[5], SB 619[3], SB 622[3], SB 626[3], SB 366[6], SB 462[6]

[1] Chem. composition [2] sheets and strips [3] tubes [4] bars [5] forged parts [6] tube accessories

Delivery Forms

Sheet	Hot- or cold-rolled, bright-/ solution-annealed, pickled and descaled
Strip	Cold-rolled, bright-/ solution-annealed, pickled and descaled
Tube	Longitudinally welded or seamless, solution-annealed, pickled and descaled
Bar	Hot-rolled or forged, solution-annealed, pickled and descaled
Wire	Rolled or drawn, solution-annealed on request, pickled and descaled
Forged part	Solution-annealed, processed on request
Welding- consumables	Welding rod, wire electrode, covered electrodes

Do you need other delivery forms or designs? Please give us a call.

Processing instructions

HASTELLOY® C-22® alloy is suitable for cold and hot forming.

The hot-forming temperature is between 1,232 °C and 954 °C.*

All customary forming processes can be used.

The material tends to work hardening.

After hot forming in general and cold forming with degrees of deformation above 15%, a new solution-annealing process is required.

* This applies in particular to products of Haynes International, Inc. We will gladly answer questions about products of other manufacturers.

Heat treatment

Solution annealing: 1,105 – 1,135 °C*

Duration: depending on thickness of the semi-finished product

Cooling: water, compressed air, or inert gas

* Other temperatures are possible depending on the manufacturer and specification.

Welding

HASTELLOY® C-22® is preferably welded using the same type of inert gas welding process as WIG and MIG as well as the arc fusion welding process.

The semi-finished products should be processed in a tension-free, metallically bright, and dirt-free state.

In order to achieve optimal corrosion resistance, care must be taken to ensure that little heat is introduced during welding.

Preheating or post-heat treatment are usually not required.

Chemical composition*

	Cr	Fe	Mo	Ni	W	V
Min.	20,0	2,0	12,5	Rest	2,5	-
Max.	22,5	6,0	14,5	-	3,5	0,35
	C	Si	Mn	P	S	Co
Min.	-	-	-	-	-	-
Max.	0,010	0,08	0,50	0,025	0,010	2,5

* weight percentage

Physical properties

Melting range	1.357–1.399 [°C]
Density*	8,690 [g*cm^{-3}]
Modulus of elasticity* (reference)	206 [GPa]
Specific heat*	410 [J · kg^{-1} · K^{-1}]
Thermal conductivity*	9,6 [W · m^{-1} · K^{-1}]
Heat expansion 20-100°C	12,4 x 10^{-6} [K^{-1}]
Specific electrical resistance*	1,14 [Ω · mm² · m^{-1}]

* at room temperature

Mechanical properties at room temperature and at elevated temperatures

Processed – solution-annealed

Semi finishes form

Sheet ≤ 50 mm

Bar / forged parts ≤ 360 mm

Test-temperature	Strength R_m	Yield strength $R_{p\,0,2}$ min. [MPa]	Yield stregnth $R_{p1,0}$ min. [MPa]	Expansion min.
[°C]	[MPa]	[MPa]	[MPa]	[%]
RT	690 – 950	310	335	45
100	–	270	290	-
200	–	225	245	-
300	–	195	215	-
400	–	175	195	-
450	–	170	190	-

Welding consumables

	DIN EN ISO	VdTÜV Data sheet-No.	AWS/ASME	DIN-material number DIN code
Bar (WIG)	18274 Ni6022 / NiCr21Mo13Fe4W3	04536	AWS A5.14 ER NiCrMo-10	2.4635 / SG-NiCr22Mo14W
Wire (MIG)	18274 Ni6022 / NiCr21Mo13Fe4W3	04535	AWS A5.14 ER NiCrMo-10	2.4635 / SG-NiCr22Mo14W
Covered rod electrode (MMA welding)	14172 Ni6022 / NiCr21Mo13W3	04534	AWS A5.11 E NiCrMo-10	2.4638 / EL-NiCr20Mo14W

We will be pleased to provide you with information and advice on machining and processing and on the selection of the suitable welding filler material. Please call us.

® HASTELLOY is a registered trademark of our contract partner HAYNES International, Inc., Kokomo, USA.

Depending on the manufacturer, the brand name of the delivery can be deviate.

Shanghai NC Metal Materials Co., Ltd.
HIGH PERFORMANCE ALLOYS
Building 2, 1st Floor, No. 1876
Chenqiao Road, Fengxian District,
Shanghai, China
Phone +86-18533346372
Email sales@ncalloys.com
Web www.ncalloys.com

For further information about our products and locations, please refer to our image brochure or consult our website at www.ncalloys.com.

Last revision: January 2026