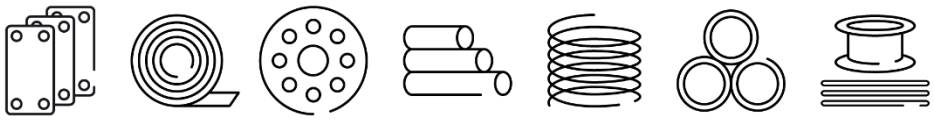
HASTELLOY® HYBRID-BC1® alloy | NiMo22Cr15 | 2.4708 | High Performance Alloys Data Sheet

Zapp is Certified to ISO 9001



HASTELLOY® HYBRID-BC1® alloy
belongs to a new group of highly corrosion resistant nickel-molybdenum-chromium alloys. The alloy is characterized by very good resistance in reducing media, combined with good resistance under the influence of oxidizing impurities.

HASTELLOY® HYBRID-BC1® alloy shows outstanding resistance in hydrochloric and sulfuric acids, even at elevated temperatures. The material shows very good resistance to pitting, stress corrosion cracking and crevice attack in chloride salt solutions.

Applications

- Vessel construction
- Heat exchangers
- Valves and pipelines construction for the chemical industry

Processing Instructions

HASTELLOY® HYBRID-BC1® alloy has a very good warm and cold forming characteristics. The preferred method of shaping is cold forming. Hot forming is carried out in the temperature range from 1,230 to 954 °C. The temperature range between 593 and 816 °C should be passed as rapidly as possible.

After hot forming generally and cold forming over 7 to 10 % a final solution annealing is required in order to obtain optimum corrosion resistance. Prior to heating, all workpieces should be free of oil, grease, carbon, sulfur-containing residues and other contaminants.

Further information under:
https://www.zapp.com/en-us/materials/high-performance-alloys-ni-co-ti

Specifications

DIN Designation	NiMo22Cr15
DIN Material Number	2.4708
UNS	N10362
DIN	17744, 17750, 17751, 17752, 17753
ASTM	B 366, B 462, B 472, B 564, B 574, B 575, B 619, B 626
ASME	Code Case 2648

Delivery Forms

Plate	hot rolled, solution annealed, pickled or de-scaled
Sheet	cold rolled, solution annealed/ bright
Strip	cold rolled, solution annealed/ bright
Tube and Pipe	longitudinally welded or cold reduced, seamless, solution annealed/ bright
Bar	rolled or forged, solution annealed
Wire	rolled or drawn
Forging	solution annealed on request, machined on request
Welding filler metal	welding bar, wire electrode coated bar electrode

Do you require other delivery forms or finishes? We will be glad to discuss your needs with you over the phone.

Chemical Composition*

	C	Cr	Mo	Fe	Si
Min.	-	13.8	21.5	-	-
Max.	0.010	15.6	23.0	1.25	0.08
	Mn	**P**	**S**	**Al**	**Ni**
Max.	0.60	0.025	0.010	0.50	Bal.

* weight %

Heat Treatment

Wrought forms of HASTELLOY® HYBRID-BC1® alloy are furnished in the solution annealed condition, unless otherwise specified. The standard solution annealing treatment consists of heating to 1,149 °C ± 15 °C. Water quenching is preferred. Rapid air cooling as secondary option.

Welding

The welding of HASTELLOY® Hybrid-BC1® alloy is typically carried out on matching materials using inert gas processes GTAW and GMAW as well as the arc welding process.

The semi-finished products should also be in a stress-free, metallic bright condition and free of dirt. In order to achieve optimal corrosion resistance, care must be taken to apply a minimum of heat during welding.

Physical Properties

Melting temperature range	1,343 – 1,443 [°C]
Density*	8,830 [kg · m^{-3}]
Modulus of elasticity* (approximately)	217 [GPa]
Specific heat*	402 [J · kg^{-1} · K^{-1}]
Thermal conductivity*	9.3 [W · m^{-1} · K^{-1}]
Coefficient of thermal expansion 20-93°C	11.5 x 10^{-6} [K^{-1}]
Specific electrical resistivity*	1.26 [Ω · mm^2 · m^{-1}]

* at room temperature

Mechanical Properties at Room Temperature

Semi-finished product form	Plate
$R_{p\ 0,2}$ min [MPa]	310
R_m [MPa]	725
A min [%]	40

® HASTELLOY is a registered trade mark of our contracted manufacturer HAYNES International, Inc., Kokomo, Indiana, USA.

Zapp Precision Metals GmbH
HIGH PERFORMANCE ALLOYS
Zapp-Platz 1
40880 Ratingen
Phone +49 2102 710-204
Fax +49 2102 710-391
highperformancealloys@zapp.com

SERVICE CENTER DEUTSCHLAND
Zapp Precision Metals GmbH
HIGH PERFORMANCE ALLOYS
Hochstraße 32
58425 Unna
www.zapp.com

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

Last revision: January 2022