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Shanghai LJ Metal Industrial Co.Ltd

Your Reliable & Professional Partner of stainless steel and high alloy

Material No.: Alloy C22/ N06022/ 2.4602

Description

EN symbol (short)	NiCr21Mo14W	**Density lb/in³**	0,314
Alloy	22	**Hardness HB**	240(max)
UNS	N 06022	**Composition**	Nickel Chrome Molybdenum Wolfram alloy
Registered work's label	Hastelloy® C22	**Category**	high-temperature resisting steels and alloys
		Structure	
		Corrosion	high corrosion resistance

Description	Alloy 2.4602 (alloy 22) is a highly non-corrosive nickel chrome molybdenum wolfram alloy and shows an excellent resistance to oxidizing, reducing and mixed acids.

Chemical Composition

		C	Mn	P	S	Cr	Mo	Si	V	Co	W	Fe	Ni
2.4602	**Min %**					20,00	12,50				2,50	2,00	bal.
	Max %	0,01	0,50	0,025	0,015	22,50	14,50	0,08	0,35	2,50	3,50	6,00	bal.
(Key to Steel 2010)													
alloy 22 N 06022	**Min %**					20,00	12,50				2,50	2,00	remainder.
	Max %	0,015	0,50	0,020	0,020	22,50	14,50	0,08	0,35	2,50	3,50	6,00	remainder
ASTM B622													

Physical properties

Property	**Value**
Density: lb/in³	0,314
Hardness: HB	240(max)
Permeability at 20°C/68°F	< 1,001

Temperature T °C/F (°C/F)	**Specific heat J / kgK (Btu /**	**Thermal conductivity W/mK (Btu·in / ft²·h·°F)**	**Electric resistance µΩ · cm (Ω circ mill /**	**Modulus of elasticity kN/mm² (10³ ksi)**	**Expansion rate from 70°F bis T 10⁻⁶ / K (10⁻⁶ / °F)**

	lb °F)		ft)		
100 / 212	423 (--)	11,1 (--)	123 (--)	202 (--)	12,4 (--)
200 / 393 (204 /400)	444 (0,106)	13,4 (94)	124 (746)	197 (28,4)	12,4 /(6,9)
300 / 572 316 / 600	460 (0,119)	15,5 (111)	125 (753)	190 (27,6)	12,5 (7,0)
400 / 752 (427 / 800)(	476 (0,114)	17,5 (131)	126 (759)	185 (26,2)	13,1 (7,4)
500 / 932/ (538 / 1000)	495 (0,117)	19,5 (140)	127 (767)	178 (25,7)	13,7 (7,7)
600 / 1112 (649/ 1200)	514 (0,125)	21,3 (156)	128 (774)	173 (24,8)	14,3 (8,1)
700 / 1292 (760 /14009	533	23,2	129	167 (23,6)	14,9 (8,5)
800 / 1472 (871 / 1600)				159 (22,3)	15,5 (8,8)
1000 / 1832				143 (20,7)	16,2

MECHANICAL PROPERTIES (20°C / 68°F)

Yield strengthRp0,2 min.N/mm²/ ksi	310/ 45
Yield strength1,0 min. N/mm²/ksi	335 /49
Tensile strength Rm N/mm²/ ksi	690 /100
Elongation A 5 (%)	45
ISO V-notch impact toughness (Average values at RT) j/cm²	>=150
ISO V-notch impact toughness (Average values at(-196°C) -320°F) j/cm²	>=120
Remarks	

TEMPERATURE INFORMATION

Application area	
Operation temperature	-321 ºF to 1382 ºF
Explanation report	good application possibilities, if strong oxidizing agents are available (such as ferric (III) chloride, chlorine, formic acid, sea wtater, acetic acid)
Solution heat treatment	
Working temperature	2021 ºF to 2075 ºF
Explanation report	fast cooling with water, air cooling possible for thicknesses up to 0.06"

Solution heat treatment	
Working temperature	2012 ºF to 1652 ºF
Explanation report	fast cooling with water or air
Processing information	

STANDARDS / INFORMATION

Standards	Description
ASTM B 366	Standard Specification for Factory-Made Wrought nickel and nickel alloy fittings
ASTM B 564-06	Standard Specification for Nickel Alloy Forging
ASTM B 574	Standard Specification for LOW-Carbon Nickel-Molybdenum Alloy Rod
ASTM B 575	Standard Specification for Plate, Sheet and Strip
ASTM B 619	Standard Specification for Welded Nickel and Alloy Pipe
ASTM B 622	Standard Specification for Seamless Nickel and Nickel-Cobalt Alloy Pipe and Tube
ASTM B 626	Standard Specification for Welded Nickel and Nickel-Cobalt Alloy Tube
DIN 17744 (2002/09)	nickel-forgeable alloy with molybdenum and chrome
DIN 17750 (2002/09)	ribbons and sheet metal out of nickel with nickel-wrought alloy properties
DIN 17751 (2002/09)	tubes out of nickel with nickel-wrought alloy properties
DIN 17752 (2002/09)	rod made from nickel with nickel-wrought alloy properties
DIN 17753 (2002/09)	wire out of nickel with nickel-wrought alloy properties

PROCESS INFORMATION

Cold forming	in solution annealed state, great modifications require intermittent annealing
Chip removing process	preferably in solution annealed state, due to tendency to cold-work hardening slow cutting rate at constant contact of cutting tools
Welding	
- Material classification acc. CEN ISO/TR 15608	**43**
- Type	welds very good
- Add. material	
- Hints	generally no heat treatment necessary after welding process

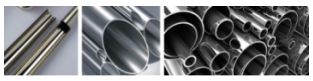
MAIN FIELDS OF APPLICATION

Details of application	Good possibilities for application when there are strong oxidants like ferric chloride, chlorine, formic acid, sea water, acetic acid

Certifications	NACE MR-01-75
Chemical Industry	
Flue gas desulphurization plants	
Environmental technology	sewage works
waste incineration plants	

RANGE OF PRODUCTS

Product type	Product
Plates / Sheets	plates/sheets plate/sheet cuts
Rotating components	fittings from barsteel
Fittings	welded elbows welded reductions Welded T-pieces seamless elbows seamless reductions seamless T-pieces
Flanges / Collars / Flared tube ends	flared tube end collars various flanges (weld neck flange,blind flange etc.)
Pipes / Tubes	welded pipes/tubes welded square pipes/tubes seamless pipes/tubes
Bar steel	flat steel section steel round bar steel hexagon steel



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