

HASTELLOY® C-22HS™ alloy

CHEMISTRY: Weight %

Ni ^a	Cr	Mo	Fe	W	Si	C
61	21	17	2*	1*	0.08*	0.01*

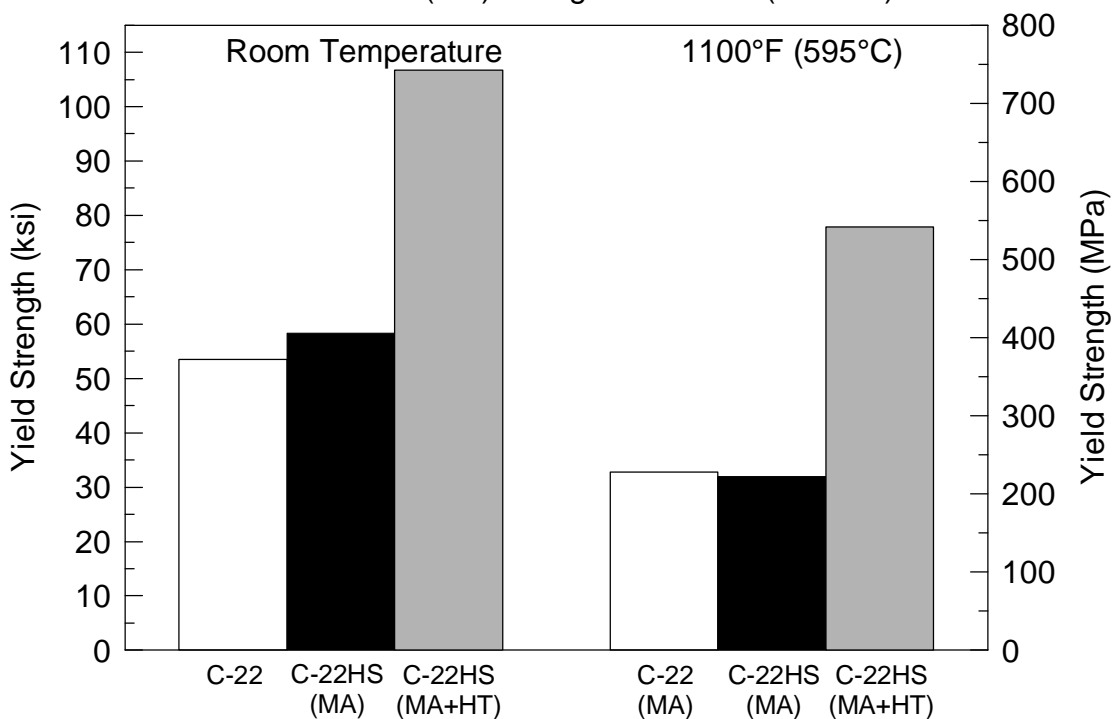
^aAs balance * Maximum

ALLOY DESCRIPTION:

Advances in materials research have led to the recent development of HASTELLOY® C-22HS™ alloy, a nickel-chromium-molybdenum alloy. This alloy was designed to exhibit corrosion resistance comparable to other C-type alloys, but which can be heat treated to obtain approximately double the yield strength. In addition to its high uniform corrosion resistance in oxidizing as well as reducing environments, the as-heat treated C-22HS alloy possesses high resistance to chloride-induced pitting and crevice corrosion attack.

Comparative Yield Strengths

Mill Annealed (MA) vs. Age-Hardened (MA+HT)



HEAT TREATMENT (Sheet, Strip, and Plate):

2000°F/Bright Anneal + 1300°F/16h/Furnace cool to 1125°F/32h/AC (Sheet and Strip)
1975°F/Anneal/Water Quench + 1300°F/16h/Furnace cool to 1125°F/32h/AC (Plate)

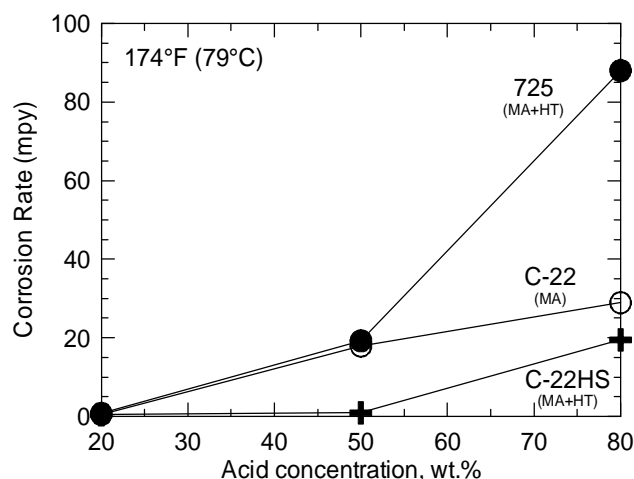
HASTELLOY® C-22HS™ alloy

COMPARATIVE CORROSION RESISTANCE:

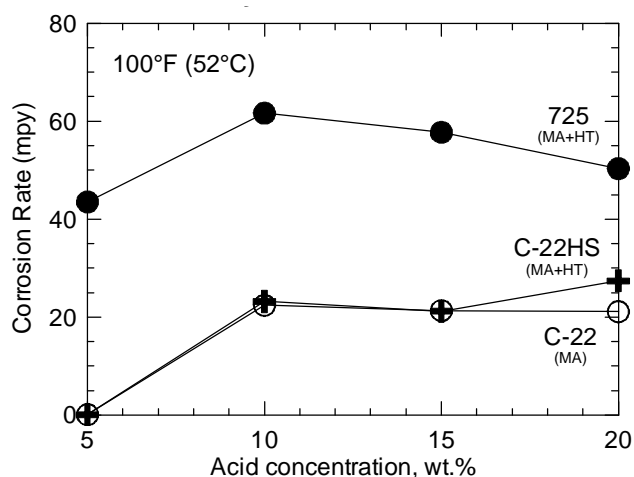
Media	Average Corrosion Rate Per Year, mils*				
	C-22HS™ (MA+HT)	C-22® (MA)	725™ (MA+HT)	625 (MA)	C-276 (MA)
2.5% Hydrochloric Acid, 194°F (90°C)	1	<1	298	72	12
10% Nitric Acid, Boiling	<1	<1	<1	<1	7
ASTM G-28A, Boiling	71	40	93	23	250
ASTM G-28B, Boiling	27	8	2401	2721	55

*To convert mils per year (mpy) to mm per year, divide by 40.

SULFURIC ACID:



HYDROCHLORIC ACID:



HYDROFLUORIC ACID:

Concentration	Corrosion Rate Per Year, mils*		
	C-22HS (MA+HT)	C-22 (MA)	725 (MA+HT)
10%	4	5	20
20%	10	11	73
30%	10	12	81

*120 hours at 100°F (38°C)

Resistance to Chloride-Induced Pitting and Crevice Corrosion

Critical Pitting (CPT) & Crevice (CCT) Temperatures in Acidified 6% Ferric Chloride + 1% HCl*

Alloy	CPT, °C	CCT, °C
C-22HS (MA+HT)	>100	75
C-22	>120	80
725 (MA+HT)	85	25
C-276	>120	55

*(ASTM G 48, C and D Procedures)

PROPERTIES DATA:

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AVAILABLE FORMS: (Routine Production)

Sheet & Strip	- 0.015 to 0.187" (0.38 to 4.75 mm)
Plate	- 0.1875 to 2.0" (4.76 to 50.8 mm)
Bar	- 0.250 to 5.0" (6.3 to 127.0 mm) dia.
Billet	- 4.0 to 12.0" (101.6 to 304.8 mm)
Wire	- 0.035 to 0.187" (0.89 to 4.75mm) dia.
Pipe	- 1/4" sched. to 8" sched. welded
Tube	- 1/2" O.D. to 8" O.D. welded

For More Information

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