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Knowledge for the Sulphuric Acid Industry

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Introduction

Hastelloy® D-205™ Alloy is an advanced high-silicon alloy based on the Ni-20Cr system. Its chief advantage over high silicon-iron based alloys are excellent formability, good resistance to elevated temperature embrittlement and superior performance in many concentrations of sulphuric acid. D-205 alloy also possesses high resistance to stress corrosion cracking and is considerably more resistance to pitting corrosion than Type 316L stainless steel and Fe-17Cr-20Ni-5Si alloys.

Given these attributes, D-205 alloy constitutes an ideal sulfuric acid, plate-heat-exchanger material. Also, the alloy is very useful for all hardware involved with the processing of highly oxidizing media. An added benefit is that the yield strength of D-205 can be more than doubled (from 49 ksi to 104 ksi) by age-hardening.

The alloy is weldable and post weld heat treatment is recommended to insure ductility, if required for service conditions.

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Chemical Composition (wt% typical)

Nickel	Ni	Balance
Chromium	Cr	19.5 - 20.5
Molybdenum	Mo	2.0 - 3.0
Iron	Fe	5.5 - 6.5
Carbon	C	0.03 max
Silicon	Si	4.5 - 5.5
Copper	Cu	1.7 - 2.3

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Corrosion Resistance

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Designations

None

Specifications

None

Physical Properties

None available

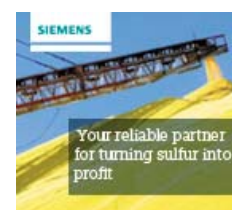
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Mechanical Properties

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Ultimate	114 ksi (mill annealed)
Tensile	142 ksi (aged 24 h/538°C)
Strength	(1000°F)/SAC)
Elongation in 2	56.5% (mill annealed)
in.	28.6 (aged 24 h/538°C)
	(1000°F)/SAC)
Yield Strength	49 ksi (mill annealed)
(0.2% offset)	104 ksi (aged 24 h/538°C)
	(1000°F)/SAC)

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