

Datasheet High-Grade Nickel

Composition of High-Grade Nickel in %

Ni	Si	Mn	Cr	Mo	Cu	Fe	Co
99.9	<0.005	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01

Ti	Al	Nb	W	C	S	Mg	Zr
<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005

Physical Properties

Area of melting temperatures (°C)	1435 - 1445
Density (g cm ⁻³)	8.9
Specific heat (J kg ⁻¹ K ⁻¹)	440
Thermal expansion (T up to 300 °C) K ⁻¹	14.5 · 10 ⁻⁶
Heat conductivity (W m ⁻¹ K ⁻¹)	90

Mechanical Properties (according to German Industry Norm DIN EN 10002)

E modulus (GPa)	180 to 200 GPa
Ultimate strain L ₀ (%)	25.0
DPH (diamond penetrator hardness)	220

Remarks	ductile, weldable
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Resistance against some selected chemicals

Chemicals	Concentration	Resistance	Remarks
Caustic soda	4 - 75%	+++ to +	
Caustic soda	100%	~	400°C
Natrium sulfide		~	
Ammonium hydroxide	> 2.5%	--- to --	
Hydrochloric acid	1 - 30%	~ to ---	
Nitric acid		---	
Phosphoric acid		- to ---	
Hydrofluoric acid		+ to -	
Sulfuric acid	5 - 93%	- to --	with air, stirred
Sulfuric acid	5 - 93%	+ to --	no air, unstirred
Acetic acid	6%	++	
Butyric acid	2 - 4%	~	
Lactic acid	1 %	+	
Citric acid	2 - 4%	~	
Fatty acids		+ to ~	225-270°C

sign	Degree of Corrosion Resistance	Loss of Weight ($\text{g m}^{-1}\text{d}^{-1}$)
+++	very good corrosion resistance	= 0.025
++	resistant, very good useable	0.025...0.25
+	resistant, good useable	0.25...2.5
~	resistant, useable	2.5...25
-	less resistant, restricted use	25...75
--	poor resistance, critical use	75...250
---	no resistance, unuseable	> 250