

## Special Metals NIMONIC® Alloy AP1 (discontinued \*\*)

Categories: [Metal](#); [Nonferrous Metal](#); [Nickel Alloy](#); [Superalloy](#)

**Material Notes:** A nickel-cobalt-chromium alloy produced by powder metallurgy. It is strengthened by precipitation hardening and by solid-solution strengthening through a molybdenum addition. Production of the alloy involves compaction, by hot isostatic pressing, of pre-alloyed powder made by argon gas atomization. The process yields an alloy with outstanding strength properties and forgeability. Used for discs in gas turbines. The standard product form is round.




Data provided by the manufacturer, Special Metals.

**Key Words:** Nickel-Chromium Alloy

**Vendors:** [Click here to view all available suppliers for this material.](#)

Please [click here](#) if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Density	8.03 g/cc	0.290 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate 	1300 MPa @Temperature 650 °C	189000 psi @Temperature 1200 °F	Precipitation Hardened prior to test
	1500 MPa @Temperature 23.0 °C	218000 psi @Temperature 73.4 °F	
Tensile Strength, Yield 	1000 MPa @Temperature 650 °C	145000 psi @Temperature 1200 °F	Precipitation Hardened prior to test; 0.2% offset
	1075 MPa @Temperature 23.0 °C	155900 psi @Temperature 73.4 °F	
Elongation at Break 	30 % @Temperature 650 °C	30 % @Temperature 1200 °F	Precipitation Hardened
	35 % @Temperature 650 °C	35 % @Temperature 1200 °F	Precipitation Hardened prior to test.

Thermal Properties	Metric	English	Comments
CTE, linear	13.5 µm/m-°C @Temperature 20.0 - 100 °C	7.50 µin/in-°F @Temperature 68.0 - 212 °F	
Specific Heat Capacity	0.435 J/g-°C	0.104 BTU/lb-°F	
Melting Point	1220 - 1340 °C	2230 - 2440 °F	
Solidus	1220 °C	2230 °F	
Liquidus	1340 °C	2440 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	4.0 %	4.0 %	
Boron, B	0.025 %	0.025 %	
Carbon, C	0.020 %	0.020 %	
Chromium, Cr	15 %	15 %	
Cobalt, Co	17 %	17 %	
Molybdenum, Mo	5.0 %	5.0 %	
Nickel, Ni	55.5 %	55.5 %	
Titanium, Ti	3.5 %	3.5 %	

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Materials flagged as discontinued (Ⓜ) are no longer part of the manufacturer's standard product line according to our latest information. These materials may be available by special order, in distribution inventory, or reinstated as an active product. Data sheets from materials that are no longer available remain in MatWeb to assist users in finding replacement materials.

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