

Designation	NiCr20	EN 2.4869	UNS (ASTM) N06003	AISI -	LMSA B600
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Chemical composition

Ni	Cr	Mn	Si	Fe	C	Al	S	P
Balance	19.0 - 21.0	1.0 max.	0.75 - 1.75	1.0 max.	0.15 max.	0.30 max.	0.01 max.	0.02 max.

Values (Weight %). In order to achieve maximum homogeneity and consistent quality, the actual manufacturing tolerances are tighter and more precisely than the composition indicated.

Main technical properties and features

NiCr20 Brightray® is a nickel-chromium alloy containing approximately 80% Nickel and 20% Chromium, whose main characteristic is to have excellent high temperature stability. This alloy can be used at service temperatures up to 1200 °C. This alloy has a low temperature coefficient of resistance (TCR), which makes it suitable for electrical control resistors. This alloy also has good resistance to oxidizing, neutral and reducing atmospheres.

Typical uses

Resistance heating elements in cooking domestic appliances and industrial equipment such as industrial furnaces.

Typical manufacturing range

	Thickness (mm)	Width (mm)	Length (mm)
Rolled products Strip in coils ^[1]	0.015 - 0.600	1.5 - 200.0	-
Strip as sheets ^[1]	0.015 - 0.600	10.0 - 200.0	100 - 3000

^[1] Not all our production possibilities are presented here. Other dimensions or product forms available upon request. Some combinations of thicknesses and widths are not possible.

Mechanical properties of strips

Temper	R _m (N/mm ²)	R _{p0.2} (N/mm ²)	A _{50mm} (%)	Hardness HV
annealed	550 - 800	180 - 450	25 min.	130 - 230
½ hard	850 - 1100	500 min.	-	240 - 360
hard	1000 min.	800 min.	-	310 min.

Physical properties

Density	g/cm ³	8.44
Melting point / Melting range	°C	1400 - 1420
Linear dilatation coefficient 20 to 100 °C	10 ⁻⁶ /°C	12.5
Thermal conductivity at 20 °C	W/m °K	19.2
Specific heat at 20 °C	J/(kg. K)	419
Electrical resistivity at 20 °C	μΩcm	109 ± 5%

Tolerances (strip and foil)

Thickness	Thickness (mm)		Lamineries MATTHEY			
	≥	<	LMSA Standard	LMSA Precision	LMSA Extreme	
<p>The table shown is an outline of our typical thickness tolerances available. They are tighter than industry standards.</p> <p>Our "LMSA Precision" and "LMSA Extreme" tolerances are available upon request.</p>	-	0.025	-	-	± 0.001	
	0.025	0.050	± 0.003	± 0.002	± 0.0015	
	0.050	0.065	± 0.004	± 0.003	± 0.002	
	0.065	0.100	± 0.006	± 0.004	± 0.003	
	0.100	0.125	± 0.008	± 0.006	± 0.003	
	0.125	0.150	± 0.008	± 0.006	± 0.004	
	0.150	0.250	± 0.010	± 0.008	± 0.004	
	0.250	0.300	± 0.012	± 0.008	± 0.005	
	0.300	0.400	± 0.012	± 0.009	± 0.005	
	0.400	0.500	± 0.015	± 0.010	± 0.006	
	0.500	0.600	± 0.020	± 0.012	± 0.007	
	0.600	0.800	± 0.020	± 0.014	± 0.007	
	0.800	1.000	± 0.025	± 0.015	± 0.009	
	1.000	1.200	± 0.025	± 0.018	± 0.012	
1.200	1.250	± 0.030	± 0.020	± 0.012		
1.250	1.500	± 0.035	± 0.025	± 0.014		
Width	Our width tolerances "Standard" is +0.2, -0.0 (or ± 0.1 mm upon request). They are available for slit widths < 125 mm and thicknesses < 1.00 mm. Special tolerances upon request.					
Camber	Width (mm)		Camber max. (mm/m)			
	>	≤	LMSA standard		LMSA extreme	
			≤ 0.5 mm	> 0.5 mm	≤ 0.5 mm	> 0.5 mm
	3	6	12	-	6	-
	6	10	8	10	4	5
10	20	4	6	2	3	
20	250	2	3	1	1.5	
Surface	Special surface qualities upon request					
Flatness	Special requirement on the longitudinal or transversal flatness upon request					

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