



**MATERIAL No.: ALLOY 601/ N06601/ 2.4851**

**DESCRIPTION**

<b>EN symbol (short)</b>	NiCr23Fe	<b>Density lb/in.<sup>3</sup></b>	0,293
<b>Alloy</b>	601	<b>Hardness (HBW)</b>	< =220
<b>UNS</b>	N 06601	<b>Composition</b>	mixed crystal alloy
<b>AFNOR</b>	N C 23 FeA	<b>Category</b>	Heat resistant steels and alloys
<b>Registered work's label</b>	Inconel® 601	<b>Structure</b>	cubic-face-centred grid
		<b>Corrosion</b>	good resistance to tensile corrosion
		<b>Additional characteristics</b>	Good resistance against carbonization high resistance to oxidation in high temperature ranges

**Description** This nickel-chrome alloy 2.4851 (low aluminum/titanium content) shows good resistance against oxidation and high temperatures  
 excellent resistance in oxidizing sulfuric atmosphere and under carbonization conditions  
 good resistance against corrosion due to tension

**CHEMICAL COMPOSITION**

		C	Mn	P	S	Cr	Si	Al	Co	Fe	Ni	Cu	B	Ti
<b>2.4851</b>	<b>Min %</b>					21,00		1,00			58,00			
	<b>Max %</b>	0,10	1,00	0,020	0,015	25,00	0,50	1,70	1,50	18,00	63,00	0,50	0,006	0,50
(Key to Steel 2010)														
<b>alloy 601</b> <b>N 06601</b>	<b>Min %</b>					21,00		1,00		remainder	58,00			
	<b>Max %</b>	0,10	1,50		0,015	25,00	0,50	1,70		remainder	63,00	1,00		

Reference:  
[ ASTM B 167]

**PHYSICAL PROPERTIES**

Property	Value
<b>Density: lb/in.<sup>3</sup></b>	0,293
<b>Hardness: (HBW)</b>	< =220

<b>Permeability at 20°C/68°F</b>		1,01			
<b>Temperature T</b> °C/F (°C/F)	<b>Specific heat</b> J / kgK (Btu / lb °F)	<b>Thermal conductivity</b> W/mK (Btu·in / ft <sup>2</sup> ·h·°F)	<b>Electric resistance</b> μΩ · cm (Ω circ mill / ft)	<b>Modulus of elasticity</b> kN/mm <sup>2</sup> (10 <sup>3</sup> ksi)	<b>Expansion rate from 70°F bis T</b> 10 <sup>-6</sup> / K (10 <sup>-6</sup> / °F)
20 / 68 (93 / 200)	450 (0,112)	11,3 (87)	119 (722)	207 (29,3)	(7,6)
100 / 212 (200 / 392)	470	12,7	120	201	13,8
300 / 572 (316 / 600)	525 (0,125)	16,0 (112)	124 (749)	191 (27,6)	14,6 (8,1)
700 / 1292 (760 / 1400)	630 (0,155)	22,2 (165)	126 (761)	161 (22,5)	16,3 (9,1)
900 / 1652 (982 / 1800)	690 (0,169)	26,1 (190)	128 (775)	138 (18,4)	17,2 (9,8)
1000 / 1832 (1093 / 2000)	710 (0,176)	27,7 (203)	129 (782)	124 (16,1)	17,7 (10,1)
1100 / 2012	740	29,3	130	011	18,3

#### MECHANICAL PROPERTIES (20°C / 68°F)

<b>Yield strength RP 0,2 (MPa)</b>	>=205
<b>Yield strength RP 1,0 (MPa)</b>	>=235
<b>Tensile strength Rm (MPa)</b>	>=550
<b>Elongation A5 (%)</b>	>=30
<b>Impact energy ISO-V</b> (average value of 3 samples)	
<b>Remarks</b>	

#### TEMPERATURE INFORMATION

<b>Application area</b>	
<b>Operation temperature</b>	°F to 1922 °F max
<b>Solution heat treatment</b>	
<b>Working temperature</b>	2012 °F to 2156 °F
<b>Explanation report</b>	cooling by water
<b>Soft annealing</b>	

<b>Working temperature</b>	1688 °F to 1796 °F
<b>Explanation report</b>	cooling by water
<b>Solution heat treatment</b>	
<b>Working temperature</b>	2192 °F to 1652 °F

#### STANDARDS / INFORMATION

<b>Standards</b>	<b>Description</b>
<a href="#">ASTM B 163</a>	Standard Specifications for seamless nickel and nickel alloy condensers and heat-exchanger tubes
<a href="#">ASTM B 166</a>	Standard Specification for Nickel-Chromium-Cobalt-Molybdenum Alloy rods, bars and wires
<a href="#">ASTM B 167</a>	Standard Specification for .... NI-Cr-Fe-alloy seamless pipes and tubes
<a href="#">ASTM B 168</a>	Standard Specification for... Nickel-Chromium-Cobalt-Molybdenum Alloy sheet metal and ribbons
<a href="#">DIN 17742 (09/2002)</a>	nickel- forgeable alloy with chrome
<a href="#">DIN 17752 (2002/09)</a>	rod made from nickel with nickel-wrought alloy properties
<a href="#">DIN EN 10088-1 (09/2005)</a>	Stainless steels Part 1: List of stainless steels
<a href="#">DIN EN 10095 (05/1999)</a>	heat resistant steel and nickel alloy

#### PROCESS INFORMATION

<b>Welding</b>	
<b>- Add. material</b>	covered rod electrode 2.4628

#### MAIN FIELDS OF APPLICATION

<b>Details of application</b>	used under high temperatures also used in the chemical industry, power plants, pollution control goods under carbonizing conditions
<b>Certifications</b>	
<b>petrochemical industry</b>	

#### RANGE OF PRODUCTS

<b>Product type</b>	<b>Product</b>
Plates / Sheets	plates/sheets plate/sheet cuts
Rotating components	fittings from bar steel
Fittings	welded elbows welded reductions

	Welded T-pieces seamless elbows seamless reductions seamless T-pieces
Flanges / Collars / Flared tube ends	flared tube end collars various flanges (weld neck flange, blind flange etc.)
Pipes / Tubes	welded pipes/tubes welded square pipes/tubes seamless pipes/tubes
Bar steel	flat steel section steel round bar steel hexagon steel

Pipe/Tube/Fitting/Flange/Valve/Plate

Stainless Steel/Nickel Alloy/Duplex

