



**MATERIAL No.: ALLOY 825/ N08825/ 2.4858**

**DESCRIPTION**

<b>EN symbol (short)</b>	NiCr21Mo	<b>Density lb/in<sup>2</sup></b>	0,294
<b>Alloy</b>	825	<b>Hardness HB</b>	135-165
<b>UNS</b>	N 08825	<b>Composition</b>	Nickel Chrome Molybdenum alloy super alloy
<b>AFNOR</b>	NC 21 FeDu	<b>Category</b>	Heat resistant steels and alloys
<b>BS</b>	NA 16	<b>Structure</b>	cubic-face-centered grid
<b>Registered work's label</b>	Incoloy® 825	<b>Corrosion</b>	against crevice corrosion good resistance to tensile corrosion sati factionary against pitting corrosion
		<b>Additional characteristics</b>	enduring in oxidation, reducing and sulfuric substances enduring in sulfuric acid and phosphoric acid solutions No translation!
<b>Description</b>	Titanium stabilized, fully austenitic nickel iron chrome alloy, good resistance to crevice / tensile / pitting corrosion.		

**CHEMICAL COMPOSITION**

		C	Si	Mn	P	S	Cr	Mo	Ni	Fe	Ti	Cu	AL	Co
<b>2.4858</b>	<b>Min %</b>						19,50	2,50	38,00	balance	0,60	1,50		
	<b>Max %</b>	0,025	0,50	1,00	0,02	0,015	23,50	3,50	46,00	balance	1,20	3,00	0,20	1,00
(Key to Steel 2010)														
<b>alloy 825</b>	<b>Min %</b>						19,50	2,50	38,00	22,00	0,60	1,50		
<b>N 08825</b>	<b>Max %</b>	0,05	0,50	1,00		0,03	23,50	3,50	46,00		1,20	3,00	0,20	
ASTM B 423														

**PHYSICAL PROPERTIES**

Property	Value
<b>Density: lb/in<sup>2</sup></b>	0,294

<b>Hardness: HB</b>		135-165			
<b>Permeability at 20°C/68°F</b>		1,004			
<b>Temperature T</b> °C/F (°C/F)	<b>Specific heat</b> J / kgK (Btu / lb °F)	<b>Thermal conductivity</b> W/mK	<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)	440 (0105) (110)	10,8 (73)	11,2	195(28,7) (27,4)	
100/212	462	2,4	114	190	14,1
200/392 (204/400)	488 (0,117)	14,1 (98)	118 (710)	185 (26,8)	14,9 (8,3)
400/762 (427/800)	540 (0,131)	16,9 (120)	124 (751)	174 (25,0)	15,6 (8,7)
500/932 (538/1000)	565 (0,137)	18,3 (131)	126 (761)	168 (23,8)	15,8 (8,8)
700/1292 (760/1400)	615 (0,153)	21 (155)	127 (765)	154 (21,2)	16,7 (9,5)
900/1652 (982/1800)	680 (0,167)	25,7 (192)	129 (782)	130 (17,3)	17,6 (9,9)
1000/1832	710	28,1	130	119	17,9

#### TEMPERATURE INFORMATION

##### **Application area**

**Operation temperature** -321 °F to 1022 °F

##### **Soft annealing**

**Working temperature** 1688 °F to 1796 °F

**Explanation report** cooling by water

**Processing information** preferably 1700°F

##### **Solution heat treatment**

**Working temperature** 2102 °F to 1652 °F quick cooling air/water

**Explanation report** when reaching 1652°F re-heating is required

**Processing information** heat oven to must value and insert component  
hold for approx. 60 min per 4" thickness

#### 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 704</a>	Standard Specification for Welded Alloy Tubes
<a href="#">ASTM B 705</a>	Standard Specification for Nickel-Alloy Welded Pipe
<a href="#">DIN 17744 (2002/09)</a>	nickel-forgeable alloy with molybdenum and chrome
<a href="#">DIN 17750 (2002/09)</a>	ribbons and sheet metal out of nickel with nickel-wrought alloy properties
<a href="#">DIN 17751 (2002/09)</a>	tubes out of nickel with nickel-wrought alloy properties
<a href="#">DIN 17752 (2002/09)</a>	rod made from nickel with nickel-wrought alloy properties
<a href="#">DIN 17753 (2002/09)</a>	wire out of nickel with nickel-wrought alloy properties

#### **PROCESS INFORMATION**

<b>Cold forming</b>	string cold work hardening, process component in annealed state, forming >15% require anew annealing
<b>Chip removing process</b>	process when annealed - mind tendency for cold work hardeneing
<b>Welding</b>	
<b>- Material classification acc. CEN ISO/TR 15608</b>	<b>45</b>
<b>- Type</b>	WIG plasma welding MIG/MAG
<b>- Add. material</b>	material nr. 2831/ rod electrode W.Nr. 2621
<b>- Hints</b>	No translation!

#### **MAIN FIELDS OF APPLICATION**

<b>Details of application</b>	good resistance to sulfuric, hydrochloric, phosphoric acids and organic acids, seawater and chloride lye
<b>Certifications</b>	pressure container from 68°F-797°F NACE MR-01-75
<b>offshore plants</b>	Pipe works
<b>sea and lake water plants</b>	Sea-water-cooled heat exchangers
<b>offshore plants</b>	Sea water desalination plant

#### **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

