



# RELIABLE PIPES & TUBES LTD.

GOVT. OF INDIA RECOGNIZED EXPORT HOUSE  
 OHSAS 18001:2007 CERTIFIED ISO 14001:2004 CERTIFIED  
 ISO 9001:2008 CERTIFIED PED CERT NO 01 202 IND/Q-11-0033

C-16, Anand Bhuvan, 163-165, V.P.Road, Mumbai -400004, Maharashtra, India  
 Phone : +91 22 43431313 (25 Lines) | Fax : +91 22 2389 4511  
 Email : [sales@reliablenickelalloys.com](mailto:sales@reliablenickelalloys.com) | [www.reliablenickelalloys.com](http://www.reliablenickelalloys.com)

## Alloy 230, Haynes® 230

AMS 5878  
 UNS N06230  
 W. NR./EN 2.4733

### Chemistry

	Ni	Cr	W	Mo	Co	Al	La	Mn	C	Si	Ph	S	B	Ti	Cu	Fe
<b>MIN</b>	47.00	20.00	13.00	1.00	-	0.20	0.005	0.30	0.05	0.25	-	-	-	-	-	-
<b>MAX</b>	65.00	24.00	15.00	3.00	5.00	0.50	0.005	1.00	0.15	0.75	0.03	0.015	0.015	0.10	0.50	3.00

### Physical Properties

Density: 0.324 lb/inch<sup>3</sup>

Melting Point: 2375- 2500°F

Temperature, °F	70	1000	1200	1400	1600	1800
Coefficient* of Thermal Expansion, in/in°F x 10 <sup>-6</sup>	-	7.9	8.1	8.3	8.6	8.9
Thermal Conductivity Btu • ft/ft <sup>2</sup> • hr • °F	6.2	13.3	14.8	16.4	17.9	19.5
Modulus of Elasticity, Dynamic psi x 10 <sup>6</sup>	31	26	25	24	23	22

\* 70°F to indicated temperature.

### Mechanical Properties

Minimum Specified Properties, AMS 5878 Sheet

Ultimate Tensile Strength, ksi	115
0.2% Yield Strength, ksi	50
Elongation, %	40
Hardness MAX, Brinell	25



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### Average Tensile Properties, Sheet

Temperature, °F	70	1000	1200	1400	1600	1800	2000
Ultimate Tensile Strength, ksi	122	102	97	78	45	25	13
0.2% Yield Strength, ksi	61	44	44	47	34	18	10
Elongation, %	47	54	57	61	75	50	37

### Typical Creep- Rupture Properties, Sheet

Temperature, °F	1200	1300	1400	1500	1600	1700	1800
10,000 Hour Rupture Strength, ksi	27.0	18.5	13.2	8.4	5.6	3.2	1.1