

**TABLE XV - COBALT BASE ALLOYS**  
Typical Chemical Range Percentages

Trade Name	C	Mn	P	S	Si	Ni	Cr	Mo	Fe	Co	W	Other
Cobalt J	2.2 2.7	1.0	.03	.03	1.0	2.5	31.0 34.0	---	3.0	Bal.	16.0 19.0	.25B, 2.0 Total
Cobalt 3	2.0 2.7	1.0	.03	.03	1.0	3.0	29.0 33.0	---	3.0	Bal.	11.0 14.0	2.0 Total
Cobalt 6	.9 1.4	1.0	---	---	1.5	3.0	27.0 31.0	1.5	3.0	Bal.	3.5 5.5	
Cobalt 12	1.10 1.70	1.00	.03	.03	1.00	3.00	28.0 32.0	---	3.00	Bal.	7.00 9.50	
Cobalt 19	1.5 2.0	1.0	.03	.03	1.0	---	29.0 33.0	---	3.0	Bal.	9.0 12.0	
Coabit 21	.20 .30	1.0	.04	.04	1.0	1.75 3.75	25.0 29.0	5.0 6.0	3.0	Bal.		.007B
Cobalt 25	.05 .15	1.0 2.0	.04	.04	1.0	9.0 11.0	19.0 21.0	---	3.0	Bal.	14.0 16.0	
Cobalt 31	.45 .55	1.0	.04	.04	1.0	9.5 11.5	24.5 26.5	---	2.0	Bal.	7.0 8.0	
Cobalt 36	.35 .45	1.0 1.5	.03	.03	.35	9.0 11.0	17.5 19.5	---	2.0	Bal.	14.0 15.0	.01-.05B
Cobalt 93	2.75 3.25	1.5	.03	.03	1.5		15.0 19.0	14.0 18.0	Bal.	4.0 7.0		1.5-2.5V
N-155	.20	1.00 2.00	.04	.03	1.00	19.0 21.0	20.0 22.5	2.50 3.50	Bal.	18.50 21.00	2.00 3.00	.10-0.20N, 0.75-1.25 Cb + Ta
Tantung G	1.8 2.2	---	---	---	---	---	26.0 29.0	---	2.0	Bal.	15.0 17.0	.15-.25B; 4.5-5.5Ta
W1-52	.40 .50	.50	.04	.04	.50	1.0	20.0 22.0	---	1.0 2.5	Bal.	10.0 12.0	1.5-2.5 Cb + Ta
F75	.20 .35	1.00	---	---	1.00	2.5	27.0 30.0	5.0 7.0	.75	Bal.	---	---

**TABLE XVI - PROPERTIES OF SEPARATELY CAST TEST BARS OF COBALT BASE ALLOYS**

Alloy	Condition	Tensile Strength MPa (psi) Range	0.2% Yield Strength MPa (psi) Range	% Elongation Range (in 2.5 cm)	Hardness Rc Range
J	As Cast	---	---	---	55-60
3	As Cast	---	---	---	48-53
6	As Cast	---	---	---	37-45
12	As Cast	---	---	---	44-50
19	As Cast	---	---	---	47-52
21	As Cast	655-896 (95-130,000)	448-655 (65-95,000)	8-20	24-32
25	As Cast	621-827 (90-120,000)	414-517 (60-75,000)	15-25	20-25
31	As Cast	724-896 (105-130,000)	517-621 (75-90,000)	6-10	20-30
36	As Cast	621-724 (90-105,000)	414-483 (60-70,000)	15-20	30-36
93	As Cast	---	---	---	61-65
N-155	Solution Anneal	621-690 (90-100,000)	345-414 (50-60,000)	15-30	90-100 (Rb)
Tantung G	---	---	---	---	48-53
W1-52	As Cast	621-724 (90-105,000)	448-517 (65-75,000)	5-9	32-38
F75	As Cast	655-758 (95-110,000)	483-552 (70-80,000)	8-15	25-34

NOTE: The above mechanical property values are for information only. They do not necessarily apply to casting. Any requirements for mechanical properties are beyond this standard and must be negotiated with the foundry.