

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	
Cobalt 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; 4.5-5.5 Ta
WI-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		0.2% Yield Strength		% Elongation Range (in 2.5 cm)	Hardness Rc Range
		English psi	Metric MPa	English psi	Metric MPa		
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	95-130,000	655-896	65-95,000	448-655	8-20	24-32
25	As Cast	90-120,000	621-827	60-75,000	414-517	15-25	20-25
31	As Cast	105-130,000	724-896	75-90,000	517-621	6-10	20-30
36	As Cast	90-105,000	621-724	60-70,000	414-483	15-20	30-36
93	As Cast						61-65
N-155	Solution Anneal	90-100,000	621-690	50-60,000	345-414	15-30	90-100 (Rb)
Tantung G							48-53
WI-52	As Cast	90-105,000	621-724	65-75,000	448-517	5-9	32-38
F75	As Cast	95-110,000	655-758	70-80,000	483-552	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.