

# COBALT-BASE ALLOY BALLS

**Uses:**

Cobalt alloy balls are used in extreme wear and temperature applications, particularly where lubrication is marginal.

**Corrosion Resistance:**

All of the alloys listed here exhibit a high degree of corrosion resistance.

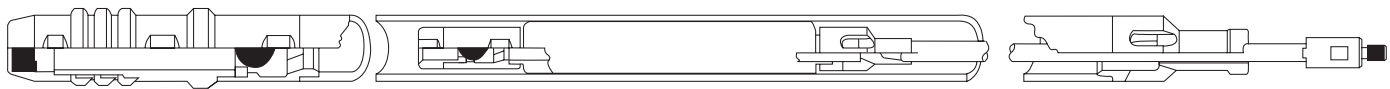
**Note:**

Hardnesses for cast cobalt alloys do not apply to large balls (1-1/2" and larger). They will have lower hardness.

	Cobalt 2	Cobalt 3	Cobalt 6	L-605 (Co-25)
<b>MATERIAL ANALYSIS</b>				
Carbon .....	2.2/2.7%	2.00/2.60%	0.90/1.40%	.05/.15%
Manganese .....	1.00% max.	1.00% max.	1.00% max.	1.00/2.00%
Silicon .....	1.00% max.	1.00% max.	1.50% max.	1.00% max.
Tungsten.....	16/19%	11.00/14.00%	3.5/5.5%	14-16
Chromium.....	31/34%	29.00/33.00%	26	19-21
Iron.....	3.00% max.	3.00% max.	3.00% max.	3.00% max.
Nickel.....	2.50% max.	3.00% max.	3.00% max.	9/11%
Other.....	2.00% max.	1.00% max.	2.00% max.	.06 max.
Molybdenum .....	—	—	1.50% max.	—
Beryllium.....	—	—	—	—
Cobalt .....	Balance	Balance	Balance	Balance
<b>Physical Properties</b>				
Specific Gravity .....	8.80	8.69	8.46	9.13
Density lb/in. <sup>3</sup> .....	0.317	0.314	0.305	0.330
<b>Mechanical Properties (Cold Worked and Age Hardened)</b>				
Tensile Strength.....	40 Kpsi	40 Kpsi	58 Kpsi	125 Kpsi min.
Yield Strength .....	60 Kpsi	44 Kpsi	78 Kpsi	45 Kpsi min.
Elongation.....	Nil	Nil	1%	10% Typical
Rockwell Hardness.....	R <sub>C</sub> 55-59 min.	R <sub>C</sub> 51-58 min.	R <sub>C</sub> 39-43	40-50 Typical

**Stock availability**

MATERIAL	BALL GRADE	AVAILABLE STOCK SIZES	ROUNDNESS DIA. TOL./BALL	BASIC DIA. TOLERANCE	SURFACE FINISH
		INCHES	INCHES	INCHES	MICRO INCH
Cobalt #2	25	3/16-5/8	.000025	±.0001	1.5
Cobalt #3	25	1/4, 3/8, 9/16	.000025	±.0001	1.5
Cobalt 6, L-605 – Non Stock		Alloys conforming to MIL - C - 24248 and MIL C - 24252 available on request			



Ball valves in sub-surface oil well pump.



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