microball

Steel - ball materials

Specification	Equivalents	Composition						Hardness	Grades	Properties
		C	Si	Mn	P	S	Cr			
Chrome Steel AISI 52100	W. 1.3505 AFN. 100 C6 B.S EN 31 DIN 100 Cr 6	0,95 min 1,10 max	0,15 min 0,35 max	0,25 min 0,45 max	0,03 max	0,025 max	1,30 min 1,60 max	HRC 60-66	All Grades	Excellent surface quality, high hardness and high load bearing capacity as a result of hardening. Throughout the manufacturing process, statistical process control assures tolerance accuracy, fine surface finish and consistant high quality.
Carbon Steel AISI 1010/1015	W1. 0301 A FN. XC 10 B.S. 045 M 10 C18	0,70 min 0,18 max	0,10 min 0,40 max	0,30 min 0,60 max	0,05 max	0,05 max		HRC 60	100 200 500 1000	Case hardened with tough core providing excellent resistance to shock load, good load-carrying ability and excellent resitance to surface wear. Carbon balls provide substantial savings for application where use of chrome balls is not necessary.
Carbon Steel C72	W. 1. 1249 A FN. XC 70 B.S 060A72 UNI C 72	0,70 min 0,75 max	0,10 min 0,40 max	0,50 min 0,70 max	0,05 max	0,05 max		HRC 60	200 500 1000	Through hardened - used for all those applications where case hardened carbon steel ball are not providing enough shock load and load capacity.

Special alloys balls

Specification	Composition	Hardness	Grades	Properties
TUNGSTEN CARBIDE	WC - Tungsten Carbide 94% Co - Cobalt 6%	HRC 79	10 - 24	Tungsten carbide balls are used where extreme hardness and wear resistance is required like bearings, ball screwers, flow meters. They are also used for coining and as privots, detents and tips for gages and tracers. Decimal - inch sized balls are widely used for ballizing or hole sizing,
K - MONEL (500)	Ni 63 - 70% AL 2 - 4% Fe 2% max Mn 1,50% max C 0,25% max Si 1,00% max Cu Balance	HRC 27 - 33	100-200	Monel is used in non - oxidizing corrosive enviroments in the chemical, pharmaceutical, marine, petroleum, textile, laundry, pulp & paper industry. It's commonly used with sea water, dilute sulfiric acid and highly resistant to alkaline (casutic) solutions. Monel-500 is providing additional strengh & hardness.
HASTELLOY „C" 276	Cr 17,00% max C 0,50% max Mo 26 - 30% Si 1,00% max Mn 1,00% max Fe 4 - 7% max Co 2,50% max Ni Balance	HRB 87 - 92	48 - 100	Resistant to strong oxidizing agents: nitirc acid, free chlorine, aqueous solutions containing chlorine or hypochlorites, acid solutions of ferric or cupric salts, resitant to hydrocloric acid at room temperature, highly resisting to acetic, formic, phosphoric, sulphurous and hydrofluoric acidis, mixtures of zinc & ammonium chlorides.

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Stainless - steel ball materials

Specification	Equivalents	Composition								Hardness	Grades	Properties
		C	Si	Mn	P	S	Cr	Mo	Ni			
AISI 420 C	W. 1. 4034 AFN. Z 40 C 13 B.S. 420 S 45 DIN X 40 Cr 13	0,40 min 0,50 max	1,00 max	1,00 max	0,045 max	0,030 max	12,00 min 14,00 max			HRC 55	10 16 24 48 100 200	420 C balls offer good hardness & surface finish. They are generally used for all applications that require corrosion resistance to water, steam water, air gasoline. Not recommended for applications requiring resistance to most chemical solutions.
AISI 440 C	W. 1. 4125 AFN. Z 100 CD 17 DI. X 105 Cr Mo 17	0,95 min 1,20 max	1,00 max	1,00 max	0,045 max	0,030 max	16,00 min 18,00 max	0,40 min 0,80 max		HRC 58-65	10 16 24 48 100 200	440 C balls afford the advantage of maximum hardness combined with corrosion - resistance properties. The hardnes together with accuracy and fine surface finish, makes them especially used for both bearing & valve applications and other severe applications.
AISI 302	W. 1.4319 AFN. Z 100 CD 17 B.S. 302S25 DIN X 12 Cr Ni 18.8	0,12 max	0,20 min 1,00 max	0,50 min 2,00 max	0,045 max	0,03 max	17,00 min 19,00 max	8,00 min 11,00 max		HRC 25-39 140-160 HB	48 100 200 1000	Austenistic unhardened stainless steel balls with excellent toughness and resistance to corrosion by such agents as oxidizing solutions, most organic chemicals, food stuffs and sterillizing solutions. They have non - magnetic properties.
AISI 304	W 1.4301 AFN. Z 6 CN 18.09 B.S. 304 S 15 DIN X 12 Cr Ni 189	0,07 max	1,00 max	2,00 max	0,045 max	0,030 max	17,00 min 20,00 max		8,50 min 10,50 max	HRC 25-39 140-160 HB	48 100 200 1000	As above with lower carbon content.
AISI 316	W. 1.4401 AFN. Z 6 CN D 1711 B.S. 316S16 DIN X 5 Cr Ni Mo 1810	0,07 max	1,00 max	2,00 max	0,045 max	0,030 max	16,50 min 18,50 max	2,00 min 2,50 max	10,50 min 13,50 max	HRC 25-39 140-160 HB	24 48 100 200 1000	Austenistic unhardened stainless steel balls as above but with increased nickel and addition of moly bdenum. This is giving much better corrosion resistance to strong acids (sulfiric, phosphoric, acetic). Can be used to elevated temperatures.
AISI 316-L	W. 1.4404 AFN Z 2 CN 1712 B.S. 316S12	0,03 max	0,20 min 1,00 max	0,50 min 2,00 max	0,045 max	0,03 max	16,50 min 18,50 max	2,25 min 3,00 max	10,00 min 14,00 max	HRC 25-39 140-160 HB	48 100 200 1000	As above with lower carbon content and increased nickel.