

## 52100 Chrome Steel Balls

### Material Characteristics

Found primarily in ball bearing designs and a variety of demanding industrial applications. A vacuum-degassed AISI E52100 chrome steel is used to obtain a superior ball with a fine surface finish, through-hardness and high load capacity. Also available in consumable electrode vacuum melt material.

### Hardness

Our modern heat treating facilities, complete with controlled atmosphere and temperature, allow us to maintain Rockwell hardness within three (3) points in any production run and to attain any specific hardness designated by the customer. AISI E52100 Chrome Steel Balls are made with a through hardness of RC 60 to 67†, depending on requirements. (A table correcting Rockwell "C" values for the curved surface to parallel flats appears on page 6.)

†Per ABMA Std 10, Table 1

### Material Analysis†

Carbon.....	0.98 to 1.10%
Manganese .....	0.25 to 0.45%
Silicon .....	0.15 to 0.35%
Phosphorus .....	Maximum of .025%
Sulphur .....	Maximum of .025%
Chromium .....	1.30 to 1.60%
Nickel .....	Maximum of 0.25%
Molybdenum .....	Maximum of 0.10%
Copper.....	Maximum of 0.35%

†Per AMS 6440

### Mechanical Properties

Tensile Strength .....	325,000 psi
Yield Strength .....	295,000 psi
Elongation in two inches .....	5%
Reduction in area .....	8%
Modulus of Elasticity .....	29,500,000 psi
Density .....	.283 lb./cubic inch

Material Conversion									
Material	AISI	Federal	Military	ASTM	JIS	UNS	DIN	AMS	Military and Gov't Stds.
52100 Chrome								6440	MS 19059
	E52100	FED-STD-66D	MIL-B-1083	A295	SUJ-2	G-52986	100Cr6	6444†	MS 19059
								6444††	

† Premium aircraft quality, consumable electrode vacuum melted.

†† Balls, low chromium, high-carbon steel, hardened and tempered.



52100 Chrome Steel Balls

Size in Inches	Metric Sizes	Minimum Crushing Load in Pounds	Balls per Pound	Balls per Carton†	Metric Balls per Carton	Weight per Carton Pounds
.006		–	45,045,000	–		–
.008		–	13,192,612	–		–
.01		–	6,802,721	–		–
.015		–	1,996,007	–		–
.02		–	841,751	–		–
.025		–	431,406	–		–
1/32	1mm	–	221,141	–	150,000	–
3/64		–	65,496	–		–
1/16		275	27,600	300,000	200,000	10.9
5/64	2mm	345	14,286	100,000	80,000	10.5
3/32		618	8,200	60,000		12.2
7/64	3mm	842	5,150	60,000	50,000	11.6
1/8		1,100	3,460	40,000		11.6
9/64		1,392	2,425	30,000		12.4
5/32	4mm	1,718	1,770	20,000	20,000	11.3
11/64		2,080	1,330	15,000		11.3
3/16	5mm	2,475	1,020	12,500	10,000	12.2
13/64		2,905	805	10,000		12.4
7/32		3,368	645	8,000		12.4
15/64	6mm	3,867	524	6,000	6,000	11.4
1/4		4,400	432	5,000		11.6
17/64	7mm	4,730	360	4,000	4,000	11.1
9/32		5,568	303	3,500		11.5
5/16	8mm	6,875	221	2,500	2,500	11.3
11/32		8,318	166	2,600		12.0
3/8	9mm	9,900	128	1,500	1,750	11.7
13/32		11,618	101	1,250		12.4
7/16	10mm	13,475	81	1,000	1,000	12.4
15/32		15,468	66	750		11.4
1/2	11mm	17,600	54	500	750	11.1
17/32		18,062	45	500		11.1
9/16		20,250	38	450		11.9
19/32		22,562	32	350		10.9
5/8		25,000	28	300		10.9
21/32		27,562	24	250		10.5
11/16		30,250	21	250		12
23/32		33,062	18	200		11
3/4		36,000	16	250		12.5
13/16		42,250	13	150		11.9
7/8		49,000	10	100		9.9
15/16		56,250	8	75		9.2
1		64,000	6.7	70		10.4

† Grade 10 and better packed in smaller quantities in bubble pack.