

Precision Chromium Steel Balls

GROUND CHROMIUM STEEL 1.3505 (AISI 52100) HARDENED (63 ± 3HRC)



DIN 5401

METRIC CLASS III

Size Ø mm	kg/ 1000 Pieces
0.8	0.002
1	0.004
1.2	0.007
1.5	0.014
2	0.033
2.5	0.064
3	0.111
3.5	0.176
4	0.263
4.5	0.375
5	0.514
5.5	0.684
6	0.888
6.5	1.129
7	1.410
7.5	1.735
8	2.105
8.5	2.525
9	2.998
9.5	3.526
10	4.112
10.5	4.760
11	5.473
11.5	6.254
12	7.106
12.5	8.031
13	9.034
13.5	10.117
14	11.283
14.5	12.536
15	13.878
15.5	15.313
16	16.843
17	20.202
18	23.981
19	28.204
20	32.896
21	38.081
22	43.785
23	50.031
24	56.844
25	64.250
26	72.273
27	80.936
28	90.267
30	111.024
32	134.742
34	161.618
35	176.302
36	191.849
38	225.634
40	263.168
45	374.706
50	514.000

ISO 3290-1975

INCH CLASS G25

Size Ø inch	Size Ø mm	kg/ 1000 Pieces
1/32"	0.7940	0.002
3/64"	1.1910	0.007
1/16"	1.5875	0.016
5/64"	1.9840	0.032
3/32"	2.3810	0.056
7/64"	2.7780	0.088
1/8"	3.1750	0.132
5/32"	3.9688	0.257
11/64"	4.3660	0.342
3/16"	4.7625	0.444
7/32"	5.5562	0.705
15/64"	5.9531	0.868
1/4"	6.3500	1.053
17/64"	6.7469	1.263
9/32"	7.1438	1.499
19/64"	7.5410	1.763
5/16"	7.9375	2.056
11/32"	8.7312	2.737
3/8"	9.5250	3.553
13/32"	10.3188	4.518
7/16"	11.1125	5.643
29/64"	11.5094	6.269
15/32"	11.9062	6.940
31/64"	12.3031	7.658
1/2"	12.7000	8.423
17/32"	13.4938	10.103
9/16"	14.2875	11.993
19/32"	15.0812	14.105
5/8"	15.8750	16.451
21/32"	16.6688	19.044
11/16"	17.4625	21.896
23/32"	18.2563	25.020
3/4"	19.0500	28.427
25/32"	19.8438	32.131
13/16"	20.6375	36.143
27/32"	21.4312	40.476
7/8"	22.2250	45.142
29/32"	23.0188	50.153
15/16"	23.8125	55.522
31/32"	24.6062	61.261
1"	25.4000	67.384
1-1/16"	26.9875	80.824
1-1/8"	28.5750	95.943
1-3/16"	30.1625	112.838
1-1/4"	31.7500	131.609
1-5/16"	33.3375	152.353
1-3/8"	34.9250	175.171
1-7/16"	36.5130	200.168
1-1/2"	38.1000	227.420
1-9/16"	39.6875	257.048
1-5/8"	41.2750	289.144
1-11/16"	42.8625	323.818
1-3/4"	44.4500	361.134
1-13/16"	46.0375	401.225
1-7/8"	47.6250	444.179
1-15/16"	49.2125	490.094
2"	50.8000	539.069

Note: Balls with minimum quantities of 10 or more pieces are invoiced per 100 pieces. Minimum quantities of 1 are invoiced per each.

When matched balls (all balls from same lot) are required, it must be specified on the order.



Precision Steel Balls



Other materials available by special order
Plastic, Copper/Brass Alloys and Ceramic

Metric Specifications

DIN 5401							ISO 3290-1975 (ANSI / AFBMA standard 10-1983)						
Ball Class	Ball Diameter Over mm	Up To mm	matched $V_{DWP}^{(2)}$ μm	matched $V_{3DWS}^{(3)}$ μm	Gauge Interval μm	Deviation μm	Ball Class	Ball Diameter Over mm	Up To mm	matched $V_{DWP}^{(2)}$ μm	matched $V_{3DWS}^{(3)}$ μm	Gauge Interval μm	Deviation μm
I		10	0.5	0.25	0.5	± 10.25	G5		12.7	0.25	0.25	1	± 5.5
II		25	1	0.5	1	± 10.5	G10		25.4	0.5	0.5	1	± 9.5
III	25	25	2	1	2	± 11	G20		25.4	1	1	2	± 11
	50	50	3	1.5	3	± 13.5	G28	25.4	50.8	1.4	1.4	2	± 13
	50	75	4	2	4	± 14	G40	50.8	76.2	2	2	4	± 18
	75	100	5	2.5	5	± 17.5	G40	76.2	101.6	2	2	4	± 18
	100	125	6	3	6	± 21	G100	101.6	127	5	5	5	± 42.5
	125	150	7	3.5	7	± 24.5	G100	127	152.4	5	5	5	± 42.5
	150	175	10	5	10	± 45	G100	152.4	175	5	5	10	± 45
175	200	16	8	16	± 72	G200	175	200	10	10	15	± 67.5	
200	250	20	8	20	± 112	G200	200	250	10	10	15	± 67.5	
IV		10	4	2	4	± 14	G40		50.8	2	2	4	± 18
V	25.4	50.8	50	25	50	± 75	G500		25.4	50	25	50	± 75
	50.8	75	75	38	75	± 113	G500	25.4	50.8	75	38	75	± 113
	75	100	100	50	100	± 150	G500	50.8	76.2	100	50	100	± 150
	100	125	125	63	125	± 188	G500	76.2	101.6	125	63	125	± 188
	125	150	150	75	150	± 225	G500	101.6	127	150	75	150	± 225
VI	all		400		175	± 263	G500	127	152.4	175	88	175	± 263
						± 200	G600	all		400			± 200

$\mu m = 0.001 \text{ mm} (0.000,001 \text{ m})$

When matched balls (all balls from same lot) are required, it must be specified on the order.

² V_{DWP} = Variation of ball diameter in a lot; difference between largest and smallest single ball diameters(2-point measurement).

See DIN 5401

³ V_{DWS} = Variation of ball diameter; difference between largest and smallest single ball diameters(3-point measurement using 60° Vee-block). See ISO 3290-1975.

Inch equivalents

DIN 5401							ISO 3290-1975 (ANSI / AFBMA standard 10-1983)						
Ball Class	Ball Diameter Over Inch	Up To Inch	matched $V_{DWP}^{(2)}$ 0.0001"	matched $V_{3DWS}^{(3)}$ 0.0001"	Gauge Interval 0.0001"	Deviation 0.0001"	Ball Class	Ball Diameter Over Inch	Up To Inch	matched $V_{DWP}^{(2)}$ 0.0001"	matched $V_{3DWS}^{(3)}$ 0.0001"	Gauge Interval 0.0001"	Deviation 0.0001"
I		0.3937	2	1	2	± 40	G5		2	1	1	4	± 22
II		0.9843	4	2	4	± 41	G10		4	2	2	4	± 37
III	0.9843	0.9843	8	4	8	± 43	G20		4	4	4	8	± 43
	1.9685	1.9685	12	6	12	± 53	G28	4	8	6	6	8	± 51
	1.9685	2.9528	16	8	16	± 55	G40	8	12	8	8	16	± 71
	2.9528	3.9370	20	10	20	± 69	G40	12	16	8	8	16	± 71
	3.9370	4.9213	24	12	24	± 83	G100	16	20	20	20	20	± 167
	4.9213	5.9055	28	14	28	± 96	G100	20	24	20	20	20	± 167
	5.9055	6.8898	39	20	39	± 177	G100	24	28	20	20	39	± 177
6.8898	7.8740	63	31	63	± 283	G200	28	31	39	39	59	± 266	
7.8740	9.8425	79	31	79	± 441	G200	31	39	39	39	59	± 266	
IV		0.3937	16	8	16	± 55	G40		8	8	8	16	± 71
V	1.0000	1.0000	197	98	197	± 295	G500		4	197	98	197	± 295
	2.0000	2.0000	295	150	295	± 445	G500	4	8	295	150	295	± 445
	2.0000	2.9528	394	197	394	± 591	G500	8	12	394	197	394	± 591
	2.9528	3.9370	492	248	492	± 740	G500	12	16	492	248	492	± 740
	3.9370	4.9213	591	295	591	± 886	G500	16	20	591	295	591	± 886
4.9213	5.9055	689	346	689	± 1035	G500	20	24	689	346	689	± 1035	
VI	all		1575		1575	± 787	G600	all		1575			± 787

Precision Stainless Steel Balls

PRECISION CLASS III HARDENED (63 ± 3HRC)
GROUND STAINLESS STEEL 1.4125 (AISI 440 C)



DIN 5401

Ø inch	Size	Ø mm	kg/ 1000 Pieces	Ø inch	Size	Ø mm	kg/ 1000 Pieces
		1	0.004	9/16"		14	11.283
		1.2	0.007			14.2875	11.993
		1.5	0.014	19/32"		15	13.878
		2	0.033	5/8"		15.0812	14.105
		2.5	0.064			15.8750	16.451
		3	0.111	21/32"		16	16.843
1/8"		3.1750	0.132			16.6688	19.044
		3.5	0.176	11/16"		17	20.202
5/32"		3.9688	0.257			17.4625	21.896
		4	0.263	23/32"		18	23.981
		4.5	0.375	3/4"		18.2563	25.020
3/16"		4.7625	0.444	25/32"		19.0500	28.427
		5	0.514			19.8438	32.131
		5.5	0.684	13/16"		20	32.896
7/32"		5.5562	0.705	27/32"		20.6375	36.143
15/64"		5.9531	0.868	29/32"		21.4312	40.476
		6	0.888	15/16"		23.0188	50.153
1/4"		6.3500	1.053	31/32"		23.8125	55.522
		6.5	1.129			24.6062	61.261
17/64"		6.7469	1.263	1"		25	64.250
		7	1.410	1-1/16"		25.4000	67.384
9/32"		7.1438	1.499	1-1/8"		26.9875	80.824
		7.5	1.735			28.5750	95.943
5/16"		7.9375	2.056	1-3/16"		30	111.024
		8	2.105	1-1/4"		30.1625	112.838
		8.5	2.525	1-5/16"		31.7500	131.609
11/32"		8.7312	2.737	1-3/8"		33.3375	152.353
		9	2.998			34.9250	175.171
3/8"		9.5250	3.553	1-7/16"		35	176.302
		10	4.112	1-1/2"		36.5125	200.160
13/32"		10.3188	4.518	1-9/16"		38.1000	227.420
7/16"		11.1125	5.643			39.6875	257.048
29/64"		11.5094	6.269	1-5/8"		40	263.168
15/32"		11.9062	6.940	1-3/4"		41.2750	289.144
		12	7.106			44.4500	361.134
31/64"		12.3031	7.658	1-13/16"		45	374.706
1/2"		12.7000	8.423	1-7/8"		46.0375	401.225
		13	9.034	1-15/16"		47.6250	444.179
17/32"		13.4938	10.103			49.2125	490.094
				2"		50	514.000
						50.8000	539.069

Note: Balls with minimum quantities of 10 or more pieces are invoiced per 100 pieces. Minimum quantities of 1 are invoiced per each.

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