

Steel ball specification conversion and weight table

Diameter		1000 pellets weight kg	Number of balls per kilogram	Diameter		1000 pellets weight kg	Number of balls per kilogram	Diameter		1000 pellets weight kg	Number of balls per kilogram
mm	in	Weight 1,000 balls	Quantity Per KG	mm	in	Weight 1,000 balls	Quantity Per KG	mm	in	Weight 1,000 balls	Quantity Per KG
0.6		0.000882	1,133,582.22	11		5.4359	183.96	34		160.5203	6.2297
0.635		0.001046	956,281.16	11.1125	7/16"	5.6044	178.43	34.925	1 3/8"	173.9813	5.7477
0.68		0.001284	778,717.68	11.5		6.2114	161.00	35		175.1045	5.7109
0.7		0.001401	713,859.35	11.5094	29/64"	6.2266	160.60	36		190.5464	5.2481
0.7938	1/32"	0.002043	489,523.44	11.9062	15/32"	6.8931	145.07	36.5125	1 7/16"	198.8007	5.0302
0.8		0.002091	478,230.00	12		7.0573	141.70	38		224.1011	4.4623
1		0.004084	244,853.76	12.3031	31/64"	7.6057	131.48	38.1	1 1/2"	225.8750	4.4272
1.1906	3/64"	0.006893	145,080.53	12.5		7.9767	125.37	39.6875	1 9/16"	255.3021	3.9169
1.2		0.007057	141,697.78	12.7	1/2"	8.3657	119.54	40		261.3805	3.8258
1.5		0.013784	72,549.26	13		8.9727	111.45	41.275	1 5/8"	287.1802	3.4821
1.5875	1/16"	0.016339	61,201.99	13.4938	17/32"	10.0345	99.66	42.8625	1 11/16"	321.6072	3.1094
1.9844	5/64"	0.031914	31,334.24	14		11.2067	89.23	44.45	1 3/4"	358.6811	2.7880
2		0.032673	30,606.72	14.2875	9/16"	11.9114	83.95	45		372.1609	2.6870
2.3812	3/32"	0.055142	18,135.07	15		13.7837	72.55	46.0375	1 13/16"	398.5001	2.5094
2.5		0.063814	15,670.64	15.0812	19/32"	14.0088	71.38	47.625	1 7/8"	441.1621	2.2667
2.7781	7/64"	0.088515	11,297.48	15.875	5/8"	16.3393	61.20	49.2125	1 15/16"	486.7652	2.0544
3		0.110270	9,068.66	16		16.7284	59.78	50		510.5088	1.9588
3.175	1/8"	0.130715	7,650.25	16.6688	21/32"	18.9150	52.87	50.8	2"	535.4074	1.8677
3.5		0.175105	5,710.87	17		20.0650	49.84	53.975	2 1/8"	642.2013	1.5571
3.5719	9/64"	0.186119	5,372.90	17.4625	11/16"	21.7477	45.98	55		679.4872	1.4717
3.9688	5/32"	0.255312	3,916.78	18		23.8183	41.98	57.15	2 1/4"	762.3281	1.3118
4		0.261381	3,825.84	18.2562	23/32"	24.8499	40.24	60		882.1592	1.1336
4.3656	11/64"	0.339801	2,942.90	19		28.0126	35.70	60.325	2 3/8"	896.5721	1.1154
4.5		0.372161	2,687.01	19.05	3/4"	28.2344	35.42	63.5	2 1/2"	1045.7176	0.9563
4.7625	3/16"	0.441162	2,266.74	19.8438	25/32"	31.9130	31.34	65		1121.5878	0.8916
5		0.510509	1,958.83	20		32.6726	30.61	66.675	2 5/8"	1210.5488	0.8261
5.1594	13/64"	0.560907	1,782.83	20.5		35.1848	28.42	69.85	2 3/4"	1391.8501	0.7185
5.5		0.679487	1,471.70	20.6375	13/16"	35.8975	27.86	70		1400.8362	0.7139
5.5562	7/32"	0.700530	1,427.49	21		37.8226	26.44	73.025	2 7/8"	1590.4057	0.6288
5.9531	15/64"	0.861634	1,160.59	21.4312	27/32"	40.2006	24.88	75		1722.9672	0.5804
6		0.882159	1,133.58	22		43.4872	23.00	76.2	3"	1806.9999	0.5534
6.35	1/4"	1.045718	956.28	22.225	7/8"	44.8351	22.30	79.375	3 1/8"	2042.4171	0.4896
6.5		1.121588	891.59	22.5		46.5201	21.50	80		2091.0441	0.4782
6.7469	17/64"	1.254313	797.25	23		49.6909	20.12	82.55	3 1/4"	2297.4415	0.4353
7		1.400836	713.86	23.0188	29/32"	49.8128	20.08	85		2508.1298	0.3987
7.1438	9/32"	1.488953	671.61	23.8125	15/16"	55.1453	18.13	85.725	3 3/8"	2572.8573	0.3887
7.5		1.722967	580.39	24		56.4582	17.71	88.9	3 1/2"	2869.4490	0.3485
7.5406	19/64"	1.751100	571.07	24.6063	31/32"	60.8460	16.43	90		2977.2874	0.3359
7.9375	5/16"	2.042417	489.62	25		63.8136	15.67	92.075	3 5/8"	3188.0007	0.3137
8		2.091044	478.23	25.4	1"	66.9259	14.94	95		3501.5799	0.2856
8.3344	21/64"	2.364374	422.94	26		71.7816	13.93	95.25	3 3/4"	3529.2968	0.2833
8.5		2.508130	398.70	26.1938	1 1/32"	73.3988	13.62	98.425	3 7/8"	3894.1215	0.2568
8.7312	11/32"	2.718410	367.86	26.9875	1 1/16"	80.2752	12.46	100		4084.0704	0.2449
9		2.977287	335.88	28		89.6535	11.15	101.6	4"	4283.2591	0.2335
9.1281	23/64"	3.106236	321.93	28.575	1 1/8"	95.2910	10.49	104.775	4 1/8"	4697.4940	0.2129
9.5		3.501580	285.59	30		110.2699	9.07	127	5"	8365.7405	0.1195
9.525	3/8"	3.529297	283.34	30.1625	1 3/16"	112.0715	8.92	152.4	6"	14455.9995	0.0692
9.9219	25/64"	3.989126	250.68	31.75	1 1/4"	130.7147	7.65	177.8	7"	22955.5919	0.0436
10		4.084070	244.85	32		133.8268	7.47	203.2	8"	34266.0730	0.0292
10.3188	13/32"	4.487256	222.85	33		146.7692	6.81	228.6	9"	48788.9985	0.0205
10.5		4.727822	211.51	33.3375	1 5/16"	151.3186	6.61	254	10"	66925.9238	0.0149

Grade: G10 to G1000					
Grade	ball diameter	spherical	surface	lot diameter	nominal ball
	variation	deviation	roughness	variation	deviation tolerance
	Vdws	Sph	Ra	Vdwl	Tdn
	not over µm				
10	0.25	0.25	0.02	0.5	*
16	0.4	0.4	0.025	0.8	*
20	0.5	0.5	0.032	1	*
24	0.6	0.6	0.04	1.2	*
28	0.7	0.7	0.05	1.4	*
40	1	1	0.06	2	*
60	1.5	1.5	0.08	3	*
100	2.5	2.5	0.1	5	±12.5
200	5	5	0.15	10	±25
500	12.5	12.5	*	25	±50
1000	25	25	*	50	±125

Anti-rust properties of Carbon Steel					
Medium	Carbon Steel	AISI 52100	AISI 420	AISI 304	AISI 316
YOLK	A	A	A	A	A
MINERAL OILS	A	A	A	A	A
WATER	C	C	B	A	A
SALTED WATER	C	C	C	A	A
HYDROCARBONS	B	B	A	A	A
HYDROCHLORIC ACID	C	C	C	C	C
SULPHURIC ACID	C	C	C	C	B
NITRIC ACID	C	C	B	A	A
ALKALINE SALTS	C	C	B	A	A
VARIOUS FOOD	C	C	B	A	A
AMMONIA 30 %	B	B	C	A	A
FRUIT / JUICE	C	C	B	B	A
BENZENE	A	A	A	A	A
CHLORINATE HYDROCARBONS	B	B	B	A	A
CAUSTIC SODA	C	C	C	B	B
ETHER	A	A	A	A	A

A = RESISTING | B = LIMITED RESISTANCE | C = NOT RESISTING

Carbon Steel Balls			
China	Japan	U.S.	Germany
Q195	S10C	AISI1010-1015	1.1121-1.1141
Q235(A,B,C,D)	S15C		
45#	S45C	AISI1045	
82B	SWRH87B	AISI1085	1.0616

Low Carbon Steel Ball										
C%	Si%	Mn%	Cr%	Ni%	Mo%	P%	S%	Al%	Cu%	
min.	0.12	---		0.3	---	---	---	---	---	---
max.	0.17		0.3	0.6	0.2	0.25	0.05	0.035	0.035	0.01 0.3
High Carbon Steel Ball										
C%	Si%	Mn%	Cr%	Ni%	Mo%	P%	S%	Al%	Cu%	
min.	0.83		0.1	0.5	---	---	---	---	---	---
max.	0.88		0.3	0.8	0.15	0.2	0.05	0.035	0.035	0.01 0.25

Limiting Value of Steel Ball Vibration Acceleration Level							
Nominal Ball Diameter		Steel Ball Vibration Acceleration Level dB					
From	To	Z1		Z2		Z3	
		Lot Average	Single Ball	Lot Average	Single Ball	Lot Average	Single Ball
3 ^a	4	36	38	34.5	36.5	33	35
4	5	36.5	38.5	35	37	33.5	35.5
5	6	37	39	35.5	37.5	34	36
6	7	37.5	39.5	36	38	34.5	36.5
7	8	38	40	36.5	38.5	35	37
8	9	38.5	40.5	37	39	35.5	37.5
9	10	39	41	37.5	39.5	36	38
10	11	39.5	41.5	38	40	36.5	38.5
11	12	40	42	38.5	40.5	37	39
12	13	40.5	42.5	39	41	37.5	39.5
13	14	41	43	39.5	41.5	38	40
14	15.5	41.5	43.5	40	42	38.5	40.5

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