ANSI/ABMA

TOLERANCES BY GRADE FOR INDIVIDUAL BALLS				TOLERANCES BY GRADE FOR LOTS OF BALLS			
	VDws	ΔRw	Ra	VDwt		ΔS	
Ball Grade	Allowable Ball Dia. Variation	Allowable Deviation from Spherical Form	Maximum Surface Roughness Arithmetic Average	Allowable Lot Dia. Variation	Nominal Ball Diameter Tolerance	Allowable Ball Gauge Deviation High Low	Container Marking Increment
METRIC µm							
3	0.08	0.08	0.012	0.13	*	+0.75 -0.75	0.25
5	0.13	0.13	0.02	0.25	*	+1.25 -1	0.25
10	0.25	0.25	0.025	0.5	*	+1.25 -1	0.25
16	0.4	0.4	0.025	0.8	*	+1.25 - 1	0.25
24	0.6	0.6	0.05	1.2	*	+2.5 -2.5	0.25
48	1.2	1.2	0.08	2.4	*	*	1.25
100	2.5	2.5	0.125	5	±12.5	*	*
200	5	5	0.2	10	±25	*	*
500	13	13	*	25	±50	*	*
1000	25	25	*				

Conversion table

Ball Size (inches to millimeters)

INCHES	MM	INCHES	MM
1/32	0.79375	**9/16**	14.28750
3/64	1.19063	**5/8**	15.87500
1/16	1.58750	**11/16**	17.46250
5/64	1.98438	**¾**	19.05000
3/32	2.38125	**13/16**	20.63750
1/8	3.17500	**7/8**	22.22500
5/32	3.96875	**1**	25.40000
3/16	4.76250	**1 1/16**	27.00020
7/32	5.55625	**1 1/8**	28.57500
¼	6.35000	**1 3/16**	30.16250
9/32	7.14375	**1 ¼**	31.75000
5/16	7.93750	**1 5/16**	33.33750
11/32	8.73125	**1 3/8**	34.92500
3/8	9.52500	**1 7/16**	36.51250
13/32	10.31875	**1 ½**	38.10000
7/16	11.11250	**1 5/8**	41.27500
15/32	11.90625	**1 ¾**	44.45000
½	12.70000	**1 7/8**	47.62500
17/32	13.49375	**2**	50.80000

DIN 5401 - NEW

Dw				VDws	tDw	Ra5)	VDwL	VDwA	IG;ST			
Grade	Nominal Ball Diameter		Gauge Allowance	µm max.	µm max.	µm max.	µm max.	µm max.	µm max.	Mean allowances in Each Grade (µm)		
G3	-	12,7	± 5,32	0,08	0,08	0,010	0,13	-	0,5	-5 .. .-0.5	0	+0.5 ... +5
G5	-	12,7	± 5,63	0,13	0,13	0,014	0,25	-	1	-5 ... -1	0	+1 ... +5
G10	-	25,4	± 9,75	0,25	0,25	0,020	0,5	-	1	-9 ... -1	0	+1 ... +9
G16	-	25,4	± 11,4	0,4	0,4	0,025	0,8	-	2	-10 ... -2	0	+2 ... +10
G20	-	38,1	± 11,5	0,5	0,5	0,032	1	-	2	-10 ... -2	0	+2 ... +10
G28	-	50,8	± 13,7	0,7	0,7	0,050	1,4	-	2	-12 ... -2	0	+2 ... +12
G40	-	100	± 19	1	1	0,060	2	-	4	-16 ... -4	0	+4 ... +16
G80	-	100	± 14	2	2	0,1	-	4,0	4	-12 ... -4	0	+4 ... +12
G100	-	150	± 47,5	2,5	2,5	0,1	5	-	10	-40 ... -10	0	+10 ... +40
G200	-	150	± 72,5	5	5	0,15	10	-	10	-60 ... -10	0	+10 ... +60
G300	-	25,4	± 70	10	10	0,2	-	20	20	-60 ... -20	0	+20 ... +60
G300	25,4	50,8	± 105	15	15	0,2	-	30	30	-90 ... -30	0	+ 30 ... +90
G300	50,8	75	± 140	20	20	0,2	-	40	40	-120 ... -40	0	+40 ... +120
G500	-	25,4	± 75	25	25	-	-	50	50	-50	0	+50
G500	25,4	50,8	± 112,5	25	25	-	-	75	75	-75	0	+75
G500	50,8	75	± 150	25	25	-	-	100	100	-100	0	+100
G500	75	100	± 187,5	32	32	-	-	125	125	-125	0	+125
G500	100	125	± 225	38	38	-	-	150	150	-150	0	+150
G500	125	150	± 262,5	44	44	-	-	175	175	-175	0	+175
G600	all		± 200	-	-	-	-	400	-	-	0	-
G700	all		± 1000	-	-	-	-	2000	-	-	0	-

ISO 3290

Grade	Ball Dia. Variation (µm)	Deviation from Spherical Form (µm)	Surface Roughness (µm)	Lot Dia. Variation (µm)	Gauge Interval (µm)	Preferred Gauge (µm)	Subgauge Interval (µm)	Subgauge (µm)
G3	0.08	0.08	0.010	0.13	0.5	-5...-0.5 0 +0.5...+5	0.1	-0.2,-0.1, 0, +0.1,+0.2
G5	0.13	0.13	0.014	0.25	1	-5...-1 0 +1...+5	0.2	-0.4,-0.2, 0, +0.2,+0.4
G10	0.25	0.25	0.020	0.5	1	-9...-1 0 +1...+9	0.2	-0.4,-0.2, 0, +0.2,+0.4
G16	0.4	0.4	0.025	0.8	2	-10...-2 0 +2...+10	0.4	-0.8,-0.4 0, +0.4,+0.8
G20	0.5	0.5	0.032	1	2	-10...-2 0 +2...+10	0.4	-0.8,-0.4 0, +0.4,+0.8
G24	0.6	0.6	0.040	1.2	2	-12...-2 0 +2...+12	0.4	-0.8,-0.4 0, +0.4,+0.8
G28	0.7	0.7	0.050	1.4	2	-12...-2 0 +2...+12	0.4	-0.8,-0.4 0, +0.4,+0.8
G40	1	1	0.060	2	4	-16...-4 0 +4...+16	0.8	-1.6,-0.8, 0, +0.8,+1.6
G60	1.5	1.5	0.080	3	6	-18...-6 0 +6...+18	1.2	-2.4,-1.2, 0. +1.2,+2.4
G100	2.5	2.5	0.100	5	10	-40...-10 0 +10...+40	2	-4,-2, 0, +2,+4
G200	5	5	0.150	10	15	-60...-15 0 +15...+60	3	-6,-3, 0, +3,+6