

Diameter and Sphericity Precision / Roughness - ISO 3290

Grade	Vdws	Rsw (deviation from spherical form)	Ra (Roughness)	Vdwl (variation of ball lot diameter)	Preffered gauges			subgauge interval	IG / ST in μm
	in μm	in μm	in μm	in μm	Value in μm				
	max.	max.	max.	max.					
G3	0,08	0,08	0,01	0,13	- 5 bis -0,5	0	+0,5 bis +5	0,1	0,5
G5	0,13	0,13	0,014	0,25	- 5 bis -1	0	+1 bis +5	0,2	1
G10	0,25	0,25	0,02	0,5	-9 bis -1	0	+1 bis +9	0,2	1
G16*	0,4	0,4	0,025	0,8	-10 bis -2	0	+2 bis +10	0,4	2
G20*	0,5	0,5	0,032	1,0	-10 bis -2	0	+2 bis +10	0,4	2
G24	0,6	0,6	0,04	1,2	-12 bis -2	0	+2 bis +12	0,4	2
G28*	0,7	0,7	0,05	1,4	-12 bis -2	0	+2 bis +12	0,4	2
G40	1	1	0,06	2,0	-16 bis -4	0	+4 bis +16	0,8	4
G60	1,5	1,5	0,08	3,0	-18 bis -6	0	+6 bis +18	1,2	6
G100	2,5	2,5	0,1	5,0	-40 bis -10	0	+10 bis +40	2,0	10
G200	5	5	0,15	10,0	-60 bis -15	0	+15 bis +60	3,0	15

Definitions

Dw = Nominal ball diameter

Diameter value which is used for the general identification of a ball size.

Vdws = Variation of ball diameter

Difference between the largest and the smallest of the single diameters of a ball.

Ra = Finished Surface roughness

In terms of norm deviations of a geometrical perfect surface, whereupon form deviations and waviness remain unconsidered.

Remark: The fixed limiting values in table 3 refer to the arithmetic mean value of the deviation of the roughness-profile from the average line Ra.

Vdwl = Variation of ball lot diameter

Difference between the mean diameters of the largest ball and smallest ball in a ball lot.

Remark: The parameter is only valid for balls of grade G 3 to G200, except for G80.

Vdwa = Variation of ball diameters in one sort

Difference between the greatest and the smallest mean ball diameters Dwm in one sort.

Remark: The parameter is only valid for balls of grade G 3 to G200, also for G80.

IG = Sort interval

Amount, in which the allowable dimension of ball diameter is evenly spread.

Dwm = Mean ball diameter

Arithmetic mean of the biggest and the smallest of the single diameters of a ball.

DwmL = Mean diameter of ball lot

Arithmetic mean of the mean diameters of the largest and the smallest ball in a ball lot.

Dws = Single ball diameter

Distance between two parallel planes tangential to the actual surface of a ball.

ST= Tolerance of sorts

Range where DwmL is allowed to vary within a sort.

Remark: The tolerance of sorts ST is identical to the amount with the sort-interval IG.