

GRADE TOLERANCES AND TERMINOLOGY

| A.F.B.M.A. Grade | Diameter Tolerance per Ball Sphericity | Diameter Tolerance per Unit Container | Basic Diameter Tolerance | RA |
|------------------|--|---------------------------------------|--------------------------|-------|
| | UM | UM | UM | UM |
| 3 | 0.075 | +/-0.10 | +/-0.5 | 0.007 |
| 5 | 0.125 | +/-0.15 | +/-1 | 0.008 |
| 10 | 0.250 | +/-0.25 | +/-2.5 | 0.010 |
| 15 | 0.375 | +/-0.40 | +/-2.5 | 0.010 |
| 25 | 0.625 | +/-0.70 | +/-2.5 | 0.010 |
| 50 | 1.250 | +/-1.25 | +/-5 | 0.020 |
| 100 | 2.500 | +/-2.50 | +/-10 | 0.040 |

| | inch | inch | inch | inch |
|------------|---------|-------------|------------|-----------|
| 3 | .000003 | +/-0.000004 | +/-0.00002 | 0.0000003 |
| 5 | .000005 | +/-0.000006 | +/-0.00004 | 0.0000003 |
| 10 | .000010 | +/-0.000010 | +/-0.0001 | 0.0000004 |
| 15 | .000015 | +/-0.000015 | +/-0.0001 | 0.0000004 |
| 25 | .000025 | +/-0.000025 | +/-0.0001 | 0.0000004 |
| 50 | .000050 | +/-0.000050 | +/-0.0002 | 0.0000008 |
| 100 | .000100 | +/-0.000100 | +/-0.0004 | 0.0000015 |

Basic diameter: The size ordered which is the basis to which the basic diameter tolerances apply. The basic diameter is specified by a fraction plus a decimal or a decimal only to the sixth place. (example: 1/4" + .0002" or .2502" - 15/64" + .0003" or .234675").

Basic diameter tolerance: The maximum allowable deviation of any ball diameter from the basic diameter, in any shipments to fill orders for that basic diameter.

Diameter tolerance per ball: The permissible difference between the largest diameter and the smallest diameter measurable on one ball.

Diameter tolerance per unit container: The permissible range of the average diameters of the individuals balls within any one unit container.

Grade: The numerical value of the diameter tolerance per ball expressed in a millionth of an inch.