

Nylon and Specialty Plastic Balls

Zytel® Nylon 101 Balls

Made in sizes from 3/32" to 3/4"

Size Tolerance ± .001 (SPH) .0005
 ± .002 (SPH) .001

Physical Properties

Coefficient of linear thermal expansion in./in./°F 4.5 x 10-5
 Heat Distortion temp. at 264 psi 170° F
 at 66 psi..... 400° F
 Water Absorption (24 hrs.) 1.5%
 Specific Gravity.....1.14
 Hardness (Rockwell R118)
 Tensile strength at 77° F 10,900 psi
 Modulus of elasticity at 77° F 400,000 psi
 Shear strength 9,600 psi

Lexan® Balls

Polycarbonate Resin
 Sizes 1/8" to 3/4"
 SPH .±001
 Tolerance±002

Physical Properties

ColorLight Amber
 Specific Gravity..... 1.20
 Rockwell Hardness..... M70, R118
 Tensile strength.....8,000 to 9,000 psi
 Water Absorption (24 hrs.) 0.2%
 Heat Distortion temp. at 66 psi 283° F
 Tabor abrasion (C5-17 Wheel) 7-11/1000 cycle
 Flammability..... Self-Extinguishing
 Impact Strength Izod 12-16 ft. lb./in.

Delrin® Acetal Balls

Acetal Resin
 Sizes 1/8" to 3/4"

SPH ± .001
 Tolerance ± .002

Physical Properties

Color Natural (white)
 Specific Gravity..... 1.425
 Rockwell Hardness..... M94, R120
 Tensile strength 7,500 to 10,000 psi
 Water Absorption (24 hrs.) 0.12%
 Heat Distortion temp. at 66 psi..... 338° F
 Tabor abrasion (CS-17 Wheel) 20 mg/1000 cycles
 Flammability..... Flammable
 Impact Strength Izod 1.2-1.4 ft. lb./in.

Available Grades and Tolerances

Grade†	Tolerance††	Sphericity
0	±.0005"	.0005"
I	±.001	.0005
II	±.002	.001
III	±.005	.005
IV	±.015	—

†Tolerance to +/- .0005 inches is possible for certain materials such as Nylon® and Acetal®. Surfaces can be tailored from rough to highly polished finishes. ††Grades apply to plastic balls only.

Special Balls (Available on Request)

1. Haynes Star-J
2. Haynes® 25
3. Hastelloy® Alloys
4. Haynes Stellite®
5. Tungsten Carbide



Ceramic Balls

For extremely high temperature environments or applications exposed to harsh chemicals, balls made of engineered ceramics offer excellent performance characteristics. Thomson offers a variety of precision ceramic balls, each providing its own unique corrosion and heat resistant qualities.

Silicon Nitride

A popular choice among bearing designs and other high precision product applications. When compared to steel, this material offers a 60% reduction in weight, up to twice the material hardness, a coefficient of thermal expansion that is 70% less than steel, and a temperature operating range up to 1800° F (982° C). Silicon nitride balls are non-corrosive, anti-magnetic, and excel in low noise, high rigidity, and high load carrying applications. These balls can be run dry in a vacuum environment and up to 500° F without lubrication.

Zirconia

A high-strength material that performs well in temperatures up to 1000° F (538° C). Operates well in environments such as molten metals, organic solvents, caustics and most acids. Because of its good resistance to abrasion and corrosion, it is often used as check valves for flow control. Zirconia undergoes "transformation toughening" when stressed by impact. This tends to stop cracks from spreading and increases the ball's strength in the stressed area.

