

Glossary – www.wireguides.com

Alumina	Al_2O_3 or Aluminum oxide.
Aspect ratio	Aspect ratio is mathematically expressed as x : y ; or, simply put, the ratio between the cross section and the length.
Chromium oxide	Cr_2O_3 , commonly used for refractory materials due to its very high melting point (2,300 ° C). It also possesses good wear- resistance, finding its applications in abrasive and high temperature environments.
Concentricity	The characteristic of having a common center, such as: a circle inside another circle.
Diabolo	A twist - imparting element in a spindlette, usually made of synthetic Sapphire, which offers high wear-resistance to the abrasive synthetic fiber being twisted, usually rotating at 400,000 rpm.
Dielectric strength	The dielectric strength of a an insulating material is the maximum electric field strength that it can withstand intrinsically without breaking down.
Flexural strength	The highest stress experienced within a material at its moment of rupture, also known as modulus of rupture, bend strength or fracture strength.
Fracture toughness	The measure of the resistance of a material to the propagation of a crack in the material.
Micro inch	A millionth of an inch, or 10^{-6} inches, which is a measurement of the roughness of

a surface under investigation. One micro inch is equal to 0.025 microns.

Micron

A millionth of a millimeter, or 10^{-6} meters, which is a measurement of the roughness of a surface under investigation. One micron is equal to 40 micro inches.

Mullite

$3 \text{ Al}_2 \text{ O}_3 \cdot 2 \text{ Si O}_2$, a synthetic refractory material that withstands high temperature. The name Mullite originated from the Isle of Mull, where some of the rare mineral is found.

Pigtail guides

Another name for Snail Guides, which describes the guide in its rudimentary form. Innovations as of late have produced a guide somewhat resembling a Pigtail. We have elected to continue to use the term Snail Guide, which may be preferable in certain quarters.

Profilometer

An instrument dedicated to the measurement of surface roughness. The contact type uses a diamond stylus for measurements, while the non-contact type is based upon laser beam interferometry.

Ring

Defined at COSMOS as a circular enclosure of an aspect ratio ≥ 1.0 .

RWR

Abbreviated form of **Relative Wear Rate**; a numerical value innovated at COSMOS to indicate the wear resistance of a material relative to that of the synthetic Sapphire, which is assigned a wear rate of **1.0**. A material of RWR 2.0 would thus wear 2 times as fast as the synthetic Sapphire under the same environmental parameters. For additional reading, please see [Selecting Wire Guides](#).

Spindlettes

A miniature textile spindle popular during the 1960 - 1980's used for imparting twists onto synthetic fibers; also known as a "spinner".

Swarf	The amount of material or stock lost in the process of grinding or sawing, corresponding to chips in the turning process.
Threading	As in the threading of a needle; in wire processing, the passing of a wire through a hollow or opening.
Titania	Ti ₂ O ₃ or Titanium trioxide.
Tube	Defined at COSMOS as a circular enclosure of aspect ratio < 1.0.
TZP	Abbreviated form of Tetragonal Zirconia Polycrystal, also known as Partially Stabilized Zirconia.
Vickers hardness	A measurement of hardness by means of a pyramid - shaped diamond indenter applying the force of a specified load onto the surface of a material for a predetermined duration of time. Hardness is calculated based on the area of the indent. The range of the load varies from 1 - 120 kg. The scale, unlike that of other hardness measurements, does not change. Because only one type of indenter is used, the readings are more uniform and accurate compared to that of other testing methods.
Rockwell hardness	A measurement of hardness based on the net increase in depth of impression produced as a load is applied onto the material under investigation. The indenter

may either be a steel ball or a diamond-tipped cone. The type of indenter and the test load determines the hardness scale. The range of measurement is limited compared to the Vickers method.

ZTA

Abbreviated form of Zirconia Toughened Alumina, which shows considerable Improvement in strength and toughness over standard alpha alumina.