

MATERIAL SPECIFICATIONS

Lapping Abrasive Machining Process

Accumet has developed several unique cutting, lapping and polishing techniques to achieve extremely tight tolerances with repeatability and consistency from piece to piece.

Lapping is a process utilized to control the surface finish, thickness identity, parallelism as well as flatness of substrates. The process is different depending upon the type of material and the physical dimensions required.

Accumet is capable of achieving thickness tolerances as tight as .000025" and surface finishes ranging from five micro-inches to 60 micro-inches. Flatness is the other crucial benefit from lapping. Accumet is capable of holding tolerances as tight as 11.6 millionths and delivering substrates in R&D quantities as well as production quantities. Consistency and repeatability are what we've built our reputation on.

Specifications:

Material	Virtually any type
Finish	Controlled finishes from 5 micro-inches to 60 micro-inches.
Thickness	Min. 0.003" up to almost any desired thickness.
Thickness Tolerance	Tolerances on thickness held as close as +/-0.000025" (Industry Standard Tolerance .0005")
Length and Width	Flat components having up to and including 20" Diagonal measurements
Flatness	Can be held within the Helium light band range (11.6 millionths of an inch equals 1 band) Industry Standard Flatness 0.0005"/"
Parallelism	Can be held within 0.000010" (Ten millionths of an inch)

Accumet offers a complete ultra-precision service for grinding, lapping, polishing, diamond sawing, laser machining, sizing a wide variety of metals (ferrous and non-ferrous), carbide, ceramic, sapphire and other materials for industrial and scientific applications, including telecommunications, semiconductors, communications, test & measurement, microelectronics, defense and security industries.

These parts can be made to specifications or blanks can be machined to any final size and surface finish. Our unique machining enables us to process rings, seals and many other shapes to fine surface finishes and tolerances.

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Polishing Abrasive Machining Process

Accumet has developed several unique cutting, lapping and polishing techniques to achieve extremely tight tolerances with repeatability and consistency from piece to piece.

Polishing is a process utilized to control the surface finish, combined with our lapping process to assure thickness identity, parallelism as well as flatness of substrates. The process is different depending upon the type of material and the physical dimensions required.

Thickness tolerances as tight as .000050" and surface finishes ranging from one tenth of a micro inch (.0000001") to 5 micro-inches (.000005"). Accumet is capable of holding tolerances as tight as 11.6 millionths (.0000116") and delivering substrates in R&D quantities as well as production quantities. Consistency and repeatability are what we've built our reputation on.

Some of the many benefits of polished substrates are the thickness uniformity and extremely smooth surface consistency from piece to piece. Thickness control of the substrate is important because many circuit line widths are designed for optimal impedance and impedance is also dependent on the control of substrate thickness. Controlling the camber of the substrate to less than .0005" allows the optimal transfer of photo mask features allowing lines and spaces in the .0002" range. For tighter tolerances call Accumet Engineering. The surface finish as well as consistency from piece to piece allows better yields and increased performance in higher frequency applications as well as Infrared/ Visible/ UV light applications.

Material	Surface Finish (u-inches)	Thickness Tolerance	Application
Polished 99.6% Alumina	Less than 1u-in	+/-0.0005"	Used for low to medium power RF & Microwave circuits
Polished 99.5% Beryllium Oxide	Less than 4u-in	+/-0.0005"	Used for high power DC/RF/Microwave circuits
Polished Aluminum Nitride	Less than 2u-in	+/-0.0005"	Used for high power DC/RF/Microwave circuits
Polished Fused Silica	Less than 1u-in (60/40 optical)	+/-0.0005"	Used for High frequency circuits requiring extremely low loss of performance
Polished Sapphire	Less than 1u-in (60/40 optical)	+/-0.0005"	

*Tighter tolerances available

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