

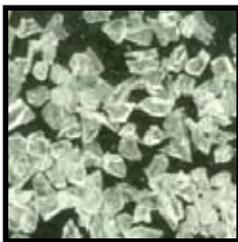
Abrasive Selection Guide

The effect of an abrasive material is caused by its three characteristics: shape, hardness, and particle size. The micro-abrasive media needed for a particular task is determined by the action or “effect” it produces.

Particle Shape - Individual particles that have points and edges such as blocky or needle shaped particles will cut and strip away surface material on impact. Spherical shaped particles do not have any cutting edges and are used to pound or “peen” a surface.

Hardness - The hardness of a selected media determines the ability of the particle to remove layers of the work piece material. Harder particles will be more aggressive. The hardness of abrasive media is measured using the Moh’s scale.

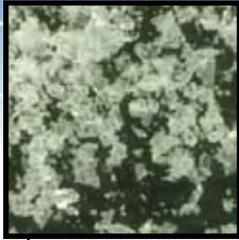
Particle Size - A larger particle generates a greater impact force as it strikes the work piece. This has two effects. The first is that it removes material faster. The second is that it tends to produce a heavier texture or rougher surface on the base material.



Aluminum Oxide

Particle Size		Particle Shape	Hardness (Moh’s)
Micron	Inch		
10	0.0004	Blocky & Sharp	9
17.5	0.0007		
25	0.001		
50	0.002		
100	0.004		
150	0.006		

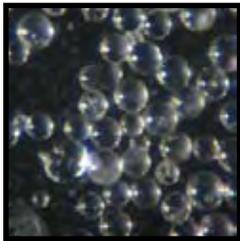
Description: Aluminum oxide is the most commonly used cutting abrasive. The shape and hardness of the particle make it an excellent choice when working with metals or hard brittle parts. Common uses for aluminum oxide include cutting, deburring and the preparation of surfaces. It is available in a wide range of sizes from 10 to 150 microns.



Crushed Glass

Particle Size		Particle Shape	Hardness (Moh's)
Micron	Inch		
50	0.002	Blocky & Sharp	Between 5 and 6

Description: This media is manufactured by crushing glass beads. The result is a mild abrasive media. It has the hardness of glass bead, 5 to 6 on the Moh's scale, with lots of shard-like edges. Crushed glass is used where only a light degree of abrading is desired.



Glass Bead

Particle Size		Particle Shape	Hardness (Moh's)
Micron	Inch		
50	0.002	Spherical	6

Description: Glass bead is commonly used where the preservation of tight tolerances is critical combined with the need to relieve machined stresses. It is also used to perform light deburring or to apply a satin-like finish on a part. The spherical shape of the glass bead keeps it from cutting into the surface of a part, so it is commonly used to relieve stresses by "pounding" the part's surface.



Plastic Media

Particle Size		Particle Shape	Hardness (Moh's)
Micron	Inch		
200	0.008	Blocky	Between 2 and 4

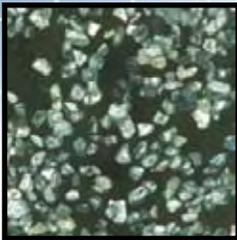
Description: This media is obtained by grinding and carefully sizing recycled plastic. It has a size similar to that of walnut shell. Its size makes it an effective tool to deburr machined plastic parts without causing dimensional changes. Plastic media can also be used to remove conformal coatings.



Pumice

Particle Size		Particle Shape	Hardness (Moh's)
Micron	Inch		
50	0.002	Blocky & Sharp	6

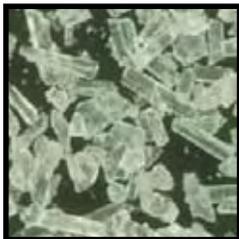
Description: Pumice is a volcanic ash that is formed when lava is permeated with gas bubbles. Lava has similar properties and chemical make-up as glass, which makes it extremely abrasive. Unlike glass, however, pumice is very soft. This makes it extremely effective when an application requires a soft abrasive.



Particle Size		Particle Shape	Hardness (Moh's)
Micron	Inch		
20	0.0008	Blocky & Sharp	9 +
50	0.002		

Silicon Carbide

Description: This is the most aggressive media used for micro-abrasive blasting. It has a hardness over 9 on the Moh's scale, just under diamond. This media is typically used only where very fast material removal is a requirement. Silicon carbide is an excellent abrasive for deburring stainless steel and titanium parts.



Particle Size		Particle Shape	Hardness (Moh's)
Micron	Inch		
50	0.002	Monoclinic	Between 3 and 4

Sodium Bicarbonate

Description: Sodium bicarbonate is one of the softest abrasives available, but the particles' needle-like or "monoclinic" shape makes it an excellent choice for abrading more pliable materials. The particles cut through soft surfaces where a blockier particle would tend to bounce off. It is commonly used to selectively remove the coating on a circuit board without damaging the individual components.



Particle Size		Particle Shape	Hardness (Moh's)
Micron	Inch		
250	0.010	Blocky	Between 3 and 4

Walnut Shell

Description: Walnut shell is manufactured by grinding nut shells. It has a much larger size than sodium bicarbonate, approximately 200 to 250 microns. Walnut shell will quickly remove polymer coatings from circuit board surfaces and can also be used to deflash plastic parts.

Selection of the Correct Abrasive Media

The selection of a particular media is always dictated by the type of work to be performed and what material will be treated. As this chart outlines, abrasive media ranges from soft sodium bicarbonate to hard silicon carbide.

Media used in micro-abrasive blasting is very different from anything used in a larger "grit" blaster. The micro-abrasive blasting media must be free of impurities and dry with a typical moisture content of less than 1%.

The Technical Support team at Comco has been specially trained to supply our customers with the correct solutions to a multitude of applications. They can confidently recommend the best abrasive media for specific uses across a wide variety of industries.

Additional information on Micro-Abrasive Media may be found in other Comco Technical Bulletins including "Micro-Abrasive Blasting Recycling Issues" and "Moisture Issues: The Importance of Clean, Dry Air."