Lindberg Products
PORT-A-BLAST
Sandblasting
Media Kit
Thank you for purchasing the PORT-A-BLAST Media Kit.

Sandblasting or often times referred to as bead blasting is a generic term for the process of smoothing, shaping and cleaning a hard surface by forcing solid particles across that surface at high speeds; the effect is similar to that of using sandpaper, but provides a more even finish with no problems at corners or crannies. Sandblasting occurs naturally as a result of particles blown by wind causing erosion. This process is reproduced artificially by using compressed air to replace the wind. Simply described, abrasive air blasting is the process of propelling a loose abrasive media of different texture and size with compressed air against a work surface. Unlike many other fields the basic technology for sand blasting has had very little change. In fact the artificial sandblasting process was patented in 1870. On the other hand, what has changed is the media used in the process.

Historically, the material used for artificial sandblasting was sand that had been sieved to a uniform size. By choosing both the grit size and the sand’s origin, it could be used for many tasks. The significance of the origin of the sand is texture. For example sand from a beach is going to be smooth and rounded due to natural erosion where as crushed sand would be sharp and jagged. With regard to grit size, it is as you would expect the force of the impact. So by understanding the characteristics of the sand, completely different results will occur. The big problem with silica sand is the silica dust produced in the sandblasting process. After sustained inhalation of the dust, it can cause a respiratory disease called Silicosis. Several countries and territories now regulate sandblasting so that it may only be performed in a controlled environment using ventilation, protective clothing and breathing air supply. In the US, several states have outlawed the sale of silica sand for sandblasting purposes.

Where does that leave us? Fortunately, other materials have been developed to replace and even improve upon silica sand in the sandblasting process. We refer to these materials as media. Some examples: crushed glass grit, steel shots, copper slag, powdered slag, glass beads (bead blasting), metal pellets, dry ice, garnet, powdered abrasives of various grades, baking soda (soda blasting), even ground coconut shells, corn cobs and walnut shells. This wide range of media has been developed for specific applications and can produce distinct surface finishes. With so many different forms of media, many commercial grade blasters are specially designed to handle multiple blast abrasives. These blasters are commonly referred to as multi-media blasters. The Model 30D which is included in this kit is such a blaster. It can handle almost all kinds of media with a range of grit sizes from 16 to 1000 and air pressure from 60 to 150 P.S.I..

Sandblasting can be used for an amazing number of tasks. Probably it’s best known for rust and scale removal. However, uses range from removal of rust and corrosion to creating works of art (carved or frosted glass). A few other common uses are cleaning boat hulls, bricks and concrete work, graffiti removal, anchor pattern creation to improve bonding for coating or painting and cosmetic finishes.
Always make sure to use proper safety equipment before using this or any blasting equipment.

Different blasting results are achieved through several factors. Media characteristics along with air volume and pressure are used together to achieve the desired results.

Media characteristics:
- **Shape** – Jagged, round, smooth or fibrous
- **Hardness** – Corn cobs to metal slag. Graded on Mohs scale.
- **Density** – Walnut shells to steel shot
- **Size** – Graded by a mesh or grid system 0 to 1200

Shape is, as you would suspect, jagged being more aggressive and round smooth or fibrous more gentle.

Hardness is rated by the Mohs scale of mineral hardness. The basis is the scratch resistance of various minerals. The ability of a harder material to scratch a softer material forms the scale. The 1 through 10 scale starts at 1, talc and goes to 10 which is diamond. Common blast media ranges from 1 to 9.

Density is the relationship between weight and size. The more dense the media, the more aggressive it is.

The size grading called “Mesh” or “Grid” is determined by the size of the opening the media will fall through (much like sifting sand through a screen). The higher the number, the smaller the opening and therefore the smaller the media size. Conversely, the smaller the number, the larger the media. The typical mesh range for common media is 8 to 1000. Usually, the more coarse the media the more intense it will be. Fine media is more gentle, while at the same time able to reach smaller places.

This Kit includes the PORT-A-BLAST Model 30D unit and 5 types of blasting media. Using the samples and this information manual will help you to determine which type of media is best suited for your application.

The Model 30D PORT-A-BLAST unit included in your kit can use media ranging from 60 mesh to 1000 mesh.

Beyond media characteristics, the most important additional factors for sand blasting are air volume and pressure. The 30D functions well with pressures from 60 to 150 P.S.I.
BLASTING ABRASIVES

Most sand blasting is done to produce two primary results, which are eroding away undesirable material and producing a desirable surface finish. The combination of proper abrasive type and size, along with air blast equipment selection, can produce finishes ranging from:

A very deep profile to provide an anchor pattern for heavy coatings or etching for a desired finish appearance.

A clean, bright, cosmetically pleasing finish without metal removal.

A finish stripped of coatings on composite materials without damage to the underlying surface.

A result without regard to surface finish which accomplishes the removal of undesirable material such as rust and corrosion.

Many of the uses of sand blasting are rather exotic and pricy, such as erosion testing for NASA, novel surface finishes, extreme erosion and surface removal. For this kit's purpose, more basic blasting needs have been addressed. The samples included are easy to find, reasonably priced, easy to use and are safe when used with proper protection such as a dust mask and eye protection. For this reason, none of the more specialized metal abrasives have been included. On the next page many of the most common types of media are listed including the five that come in this kit.
Following is a list of the most common abrasives – items in bold are the ones included in this kit.

NON-METALLIC ABRASIVES

Brown Aluminum Oxide
White Aluminum Oxide
Silicon Carbide (Sand)
Glass Beads
Sodium Bicarbonate (Baking Soda)
Plastic Blasting Media
**Walnut Shells, Almond Shells, Corn Cobs**
Garnet
Crushed Glass Grit
Silicon Carbide Grit (hardest of all)
**Slag Abrasives**
Non-Silica Sand (Starblast)

METALLIC ABRASIVES

Steel Shot
Steel Grit
Cast Stainless Steel Shot
Stainless Steel Cut Wire
Zinc Cut Wire
Carbon Cut Wire

On the following pages, the five included media samples are detailed as to their features and uses. They are listed from most gentle to most aggressive.
Walnut Shells – 

One of the most gentle abrasives offered in sandblasting. It is a hard fibrous product made from ground or crushed walnut shells. Walnut shell grit is the most versatile of the organic media (almond shells, coconut shells and corn cobs) due to its angular durable shape, while still being considered a soft media. Walnut shell has a wide variety of uses. It can be used as an economical biodegradable alternative for sensitive blasting operations that requires mildly aggressive stripping without a negative affect on the substrate. It is commonly used to polish and clean soft metals, fiberglass, wood and stone. Walnut shells are also used to clean delicate molds, jewelry polishing, cleaning armatures and electric motors prior to rewinding, de-flashing plastics and polishing watches. It will not etch or remove softer wood or stone materials. Use walnut shells to achieve an excellent finish without scratching or pitting the surface. Because of its resistance to breakdown, walnut shells can be recycled to help reduce costs. The walnut shell particles are tough and possess high strength, but are not abrasive in character. Walnut shells won’t generate much dust and can be used with most types of blast equipment. Additionally important is that they are an excellent biodegradable abrasive. Look for this material to clean sensitive surfaces while not imparting a profile.

Features:
One of the harder organic abrasives
Environmentally friendly
Recyclable (more than any of the other organic media)
Excellent durability
Cleans without scratching or pitting
Low dusting (safe alternative to sand)
Glass Beads—

Glass beads will clean metal parts without damaging the surface. This abrasive is also ideal for de-scaling, de-burring and providing a smooth or matte finish on metal surfaces, rubber and plastic materials. Made from lead-free glass it contains no free silica. As the name suggests, glass beads are manufactured into preformed ball shapes and therefore will not pit or etch like jagged media. It is second behind walnut shells in gentleness of the five types of media included in this kit. Glass beads under pressure will still offer a slight peened surface, making for a good painting surface. Glass beads are available in a large range of sizes (mesh 50-325). For the PORT-A-BLAST Media Kit, we have chosen size 150 which seems to serve most needs. Most common uses: cleaning automotive parts, castings, rebuilt engines, stripping paint from aluminum & other soft metals. Finishing: blends surface defects, removes defects from molded parts and provides a satin to matte finish on aluminum castings, cookware, stainless steel parts, medical equipment, etc. De-burring: removes rough edges from castings, gears and machine parts. Its round shape makes it ideal for peening items, such as crank shafts and gears.

Features:
Round abrasive
Recyclable
Environmentally friendly and clean abrasive
Low breakdown rate
Meets all military specifications
Starblast (DuPont Staurolite Products)

Since Starblast is a small part of the Dupont Staurolite product line, that name is also used in this discussion.

Staurolite is a name for a variety of loose mineral abrasive grains that the DuPont Co. domestically manufactures. These Staurolite Products are used for various applications, the most popular being surface preparation for coating on steel. There are 6 products that are available in the DuPont Staurolite Products group. The one most widely used abrasive grain is Starblast (the one included in this kit). Starblast is very popular with painting contractors because of the product's low dust and fast cutting qualities. Starblast is also 95% free of silica. Starblast blasting abrasives are a loose blend of coarse and fine staurolite sands that are uniformly sized. The grains have clean rounded surfaces. Mined from DuPont mineral deposits in northeast Florida, the naturally occurring sands are washed to ensure freedom from dirt, dust and ultra-fines.

Features:
Greater blasting visibility due to considerably less dust generation
Lower labor costs through faster and more efficient cleaning
Less material costs due to reusability
More uniform blasting pattern
Guaranteed to contain <5% free silica
Rounded sub angular grains result in less abrasive embedment
Electrically nonconductive
California Air Resources Board certified
Brown Aluminum Oxide –

Aluminum oxide is designed for pressure blasting materials of almost every type. Since it has a crystalline shape, it can be very aggressive. On the other hand, it is more commonly used as a very small mesh size. By combining the jagged shape and the relative small grid size aluminum oxide makes a perfect etching media. It is also used for the preparation of surfaces prior to painting or bonding; as well as for light de-burring, scale removal and the generation of matte finishes. Normally aluminum oxide is closely sized, enabling operators to consistently duplicate finishes. Aluminum oxide can be used over and over again. Aluminum oxide blasting abrasive is high in quality, tough and long lasting. The media is an excellent and safe etching abrasive. It is best used as a rust remover and etching abrasive. Glass, aluminum and stone all etch beautifully. It also will provide a relatively gentle rust remover. It is very often the media of choice for artists doing glass etching.

Features and applications:
No free silica
Extremely low iron content (makes it less likely to promote dust)
Recyclable (4-7 times)
Mohs hardness 8.0-9.0
Grit size 12-220
Very aggressive abrasive
Often used when tolerance for iron contamination is extremely low
Copper Slag

Copper slag is a by-product of manufacturing copper. The slag is processed into an abrasive by Opta Minerals. Typically it is composed of ferrosilicate (Fayalite) material and oxides, formed when the molten slag is quenched in cold water. This cooling process fractures the slag into coarse and angular particles, making it an ideal blasting slag with optimal blasting properties. The most jagged of the five kit samples, copper slag is the most aggressive abrasive of the five. The included #EG20 – provides 1.5-3.0 Mil profile – a utility size for all kinds of blasting jobs. Suitable for the removal of rust, paint and mill scale. The user must be aware that Copper Slag will erode the base surface when removing coatings. It is not the hardest of all media, but instead copper slag is very sharp and jagged edges make it one of the most aggressive medias.

Features:
High density (highest of most slags)
Angular and aggressive
Very high cleaning speed
Very low dust level
Lower abrasive consumption (recyclable)
No detectable “crystalline silica” (safe)
Depending on the size of your job, there may not be enough media to complete it. Remember, most media is reusable a few times. However, if you only need a small quantity more we can help you with a duplicate sample of the media you need. These may be found on our website, www.portablast.com or calling us at 800-453-0386. If you require larger amounts of material, we recommend calling your local sand blasting supplier for their media. Some larger national companies like McMaster Carr are good resources for a large variety of blasting media.