



FINTEC
METAL FINISHING TECHNOLOGY

Common Abrasive Blasting Abrasives

Abrasive blasting is a term that denotes a method of finishing that is accomplished by propelling an abrasive particle against a substrate to provide a desired surface finish or improvement. This finishing method is used for many purposes including descaling, coating removal, smoothing or roughening of a surface, heat check removal and many more.

There are many types of abrasives used in abrasive blasting and each one has specific characteristics that makes is best suited for certain applications.

***Special Note:** Sandblasting and Abrasive blasting are often used to denote the same process. It is not recommended in a conventional dry sandblast process to use silica sand. Though sand has a lower initial cost per pound it requires twice as much abrasive to accomplish the same job and there are many health concerns with free silica. (See Silicosis)

Typical Medias used in Sand Blasting

Glass Beads: Glass is not as aggressive a blasting media as many other industrial abrasives, but it is used extensively in across many industries. Glass bead is an excellent choice for applications that require a softer, brighter finish. It is well suited for stainless steel applications, aluminum and other metal substrates that require a gentler abrasive. Glass beads can also be reused on average 8-10 passes through the nozzle if pressure is maintained below 80PSI.

Crushed Glass: Crushed glass is typically manufactured using recycled plate or bottled glass. It is run through a crushing rod mill prior to being sieved for size. Crushed glass is a great alternative to sand, garnet and aluminum oxide. Initial cost is moderate, and recyclability is good typically ranging from 8-12 passes.

Aluminum Oxide: Aluminum oxide is characterized by its superior hardness and strength. It can be found in applications ranging from anti-slip surfaces, industrial applications as a blasting media, and as a raw material in refractories. It is designed for abrasive pressure blasting/suction blasting of almost any type of substrate including: glass, granite, marble, and steel, cast iron. Due to its ability to deeply etch it is often in the preparation of surfaces prior to painting or coatings.

Silicon Carbide: Silicon carbide is the hardest abrasive blasting material available, making it a great choice for your most challenging surface finishing applications. It is available in various colors and purities. Its primary use ranges from bonded abrasive tools, lapping, polishing, glass etching and heavy-duty blast cutting applications. This abrasive is often used in applications where there will be brazing involved in the subsequent operations.

Plastics: Plastic abrasive is a dry thermoset cleaning media made from crushed urea, polyester or acrylic. Each media type is available in a range of hardness and particle size. Plastic is generally regarded as the best media for mold cleaning, blasting of plastic parts, or in applications where the removal of the substrate material is not permitted. Common industries include automotive, aviation, boating, electronics and industrial applications.

Steel Shot & Grit: Steel abrasive is a cost-effective alternative to other abrasives due to its toughness and high recyclability often surpassing 200+ passes. It can be used on a variety of surfaces to effectively remove contaminants, texture a surface for proper adherence of a final coating, or in peening (hardening) applications. The correct size, hardness and shape play a significant role in the proper media selection. Many applications lend themselves to blending steel shot and grit in order to obtain the desired surface finish! Steel shot and grit can be utilized in pressure blast applications as well as in wheel blast machines.

StarBlast: Starblast™ is a mined loose blend of coarse and fine staurolite sands with extremely low levels of silica making it an ideal general-purpose blasting abrasive. It is perfect for removing scale and corrosion from steel surfaces, while offering a low dust levels for improved visibility. Garnet does not lend itself well to recycling averaging just over 2 passes through the nozzle!

Walnut Shells: Walnut shell abrasive is a hard naturally occurring material made from crushed walnut shells. It is one of the harder of the "soft abrasives" and is available in a variety of sizes for blast cleaning and polishing softer surfaces that could incur damage from more harsh abrasives. Typical applications include polishing of soft metals, fiberglass, wood, plastic and stone. It can also be used in tumbling operations for polishing steel, brass, copper aluminum, gem and jewelry.

Corn Cobs: Corn cob abrasive is a granular abrasive manufactured from crushing the dense woody ring of a corn cob into various grit sizes. It is one of the softer of the naturally occurring abrasives making it ideal for cleaning, deburring, burnishing and de-flashing applications. Common industries include jewelry, cutlery, engine parts, fiberglass and the removal of graffiti or debris from wood, brick or stone. Ideal abrasive for reconditioning log homes to help restore a lighter brighter appearance.

Garnet Abrasive: Garnet is harder, heavier and more durable than sand and cuts faster but is only slightly more durable than sand. Garnet is derived from mined Almandine and Andradite mineral deposits. Garnet is often used in wet and dry blasting processes. Garnet will typically yield 2 passes through a nozzle before becoming too fine to utilize.

MEDIA	ALUMINUM OXIDE	GLASS BEADS	CRUSHED GLASS	PLASTIC ABRASIVE	SILICON CARBIDE
DESCRIPTION	Sharp, angular long lasting media for fast etching & profiling resulting in anchor pattern Available: in Brown, Black or White	Round Soda-lime glass spheres, silica-free, to produce a bright, satin matte type finish; minimal stress on parts	Silica-free From 100% recycled glass product; economical efficient stripping applications	Soft abrasive available in compositions; Urea, Melamine, Acrylic each offering varying hardness & aggression characteristics applicable in aerospace & automotive applications	Extremely aggressive and hard abrasive for fast cutting applications and deep etching. Ideally suited for cutting stone, glass and other hard substrates
HARDNESS MOH	8 - 9	5 - 6	5 - 6	3 - 4	9 - 9.5
SURFACE PROFILE	High etch	Low etch-Satin	Med-Hi etch	No etch Stripping	Very high etch
SURFACE REMOVAL	Yes	Slight	Slight	Slight	Yes
RECYCLABILITY	High	High	None-consumable	High	High
WORKING SPEED	Fast	Medium-Fast	Fast	Medium	Very Fast
BULK DENSITY	110#/ft ³	95#/ft ³	100#/ft ³	50#/ft ³	90#/ft ³

MEDIA	STEEL SHOT	STEEL GRIT	CORN COB	WALNUT SHELL	STARBLAST
DESCRIPTION	Cast steel shot, round spheres for polishing & penning applications. Available in a variety of hardness for various results	Angular steel particles for fast stripping & aggressive applications requiring higher etch surface profiles.	Organic soft media with very low abrasion, minimal substrate removal, such as wood surfaces. Environmentally safe	Organic angular crushed shells where a softer abrasive is required while offering a mildly more aggressive stripping than softer cobs. Environmentally safe	Blend of coarse & fine staurolite sands, uniformly sized with clean rounded surfaces, used in steel fabrication & bridge maintenance to remove rust, mill scale & weathered coatings.
HARDNESS	40 – 51 Rockwell C Scale	40 – 65 Rockwell C Scale	4 – 4.5 Moh	4.5 – 5 Moh	6.5 – 7.0
SURFACE PROFILE	No etch	High etch	None	Low etch	Medium etch
SURFACE REMOVAL	No	Moderate	No	Slight	Moderate
RECYCLABILITY	Very high	Very High	Low	Low	High
WORKING SPEED	Medium	Fast	Slow	Medium-Slow	Medium-Fast
BULK DENSITY	230#/ft ³	260#/ft ³	40#/ft ³	50#/ft ³	128#/ft ³