GUYSON


Guyblast


Saftigrit Brown


Walnut Shell

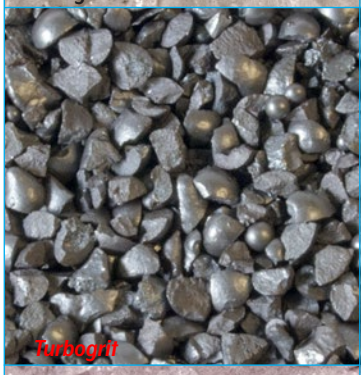

Honite - Glass Bead

Blast Media Guide

guyson.co.uk

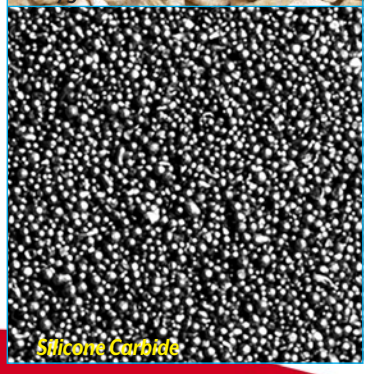
Cleaning, paint removal, etching


Saftigrit White


Turbogrit


Saftigrit Pink


Loygrain


Silicone Carbide

We should begin a discussion of blast media with some observations about the term 'sand blasting'. Natural silica sand or beach sand may be cheap, but this granular mineral material and the vitreous slag by-products that are marketed as substitutes for sand in outdoor blasting are generally not suitable for indoor cabinet-type blast systems that recirculate media.

All such materials have an extremely high rate of fracture, leading to problems that will shortly be explained. More importantly, you must understand that the use of silica sand for blasting may result in the release into the air of free silica that can cause the respiratory ailment called silicosis. If you need the surface finish generated by such mineral grit, you can choose from many other media that will do the work and that do not bring with them the liabilities and health hazards associated with sand blasting.

Recently there have also been some environmental issues with cheap imported glass bead blast media, where the original source of the recycled glass has been manufactured including some 'heavy metals' banned in the EU and these continue to transfer through the process line. So it pays to investigate the source of your media or buy from reputable media specialists.

So, what can be used to make blast media?

The simple answer is anything! If a product can be produced in a size small enough to allow it to be propelled through a blasting system, then it qualifies for the job. However, how it performs and what effects it creates are down to many different factors. In summary, some of these are:

❑ Mass	❑ Shape	❑ Size
❑ Density	❑ Hardness	❑ Chemical composition
❑ Speed at impact	❑ Direction of impact	❑ Substrate being blasted

The most important properties that should be considered in the selection of blast media for a particular application are the material or chemical composition, hardness, density, particle shape, screen or particle size and impact resistance. Both the technical performance of the media and the cost of the process are at stake in the choice of blasting materials.

Commonly available blast media include agricultural materials such as ground nut shells or starch grit, mineral substances like aluminium oxide or silicon carbide, ceramic shot and grit, glass in the form of beads or granular crushed glass; various plastics formed into beads or ground up into angular particles and metals such as steel shot and iron grit. Today, all or most of these media are engineered materials, formulated or processed to emphasize useful characteristics for impact treatment. It should be noted that some of the media in many of these categories of materials are primarily marketed for outdoor or single-pass blasting operations versus use in longer-cycle cabinet blast media delivery systems.

Typically, what products are used for blast media and where would they be used?

They can be subdivided in the following general categories:

Aluminium Oxide/Silicon Carbide

Different qualities of this exceptionally hard material can be used for many different cleaning, etching and surface preparation applications.

Glass

Mainly used in bead form for general cleaning and peening of metallic components.

Metals

Steel, iron, aluminium and brass are formed into pellets or cut wire for cleaning, derusting / descaling and peening applications.

Plastics

Both thermoset and thermoplastic products can be used for a wide range of cleaning, deburring / deflashing and paint stripping applications.

Ceramics

Useful for finishing and peening applications where long bead life is important.

Natural Products

Corncob and granulated shells & kernels can be used for sensitive cleaning applications.

Shot peening, cosmetic finishing

Density or particle mass is a major factor in the energy that media can deliver to the surface on impact. Heavy particles pack more punch than light ones and may be capable of greater surface modification, however, increased particle velocity can compensate for lower density up to the point where an excessive fracture rate becomes noticeable.

Media shape

Media particle shapes fall broadly into the categories of shot and grit. Spherical particles distribute their impact over a larger area, moderating the impact and potentially creating a round-bottomed dimple in the surface. Sometimes called a peened finish, the effect of shot blast treatment is likely to be a semi-reflective sheen appearance. With angular grit media, the impact may be concentrated on a point of the particle or a sharp edge, generating an etched, matte finish that is characteristically bright, but non-reflective. In terms of surface modification capabilities, comparing peened versus etched surfaces created by different-shaped particles, the contrast is not so much in the final texture or depth of impression, but in the nature of the indentations in the surface and its reflectivity.

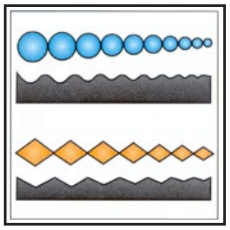
BLAST MEDIA SELECTION

Feasibility studies establish the correct media in terms of composition, particle size, operating mix, density, hardness and impact resistance and this becomes a critical factor in machine specification.

LOW DENSITY	MEDIUM DENSITY	HIGH DENSITY
Plastic Media	Mineral Media	Metallic Media
Low Impact	Medium/High Impact	Exta Impact

Media size

Particle size has an important effect on the number of impacts per second of blasting, so it is advisable to use media of the smallest screen size that will do the work, in order to reduce process time to a minimum. Larger particles may be capable of creating bigger indentations and more texture in the surface, whereas smaller ones produce dimples or angular dents of lesser diameter. In some instances, the choice of media screen size is dictated by surface features such as holes or narrow places where shot or grit may penetrate less effectively, become entrapped or lodge in recesses of the component.



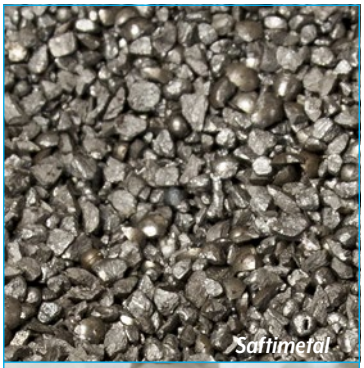
Media hardness

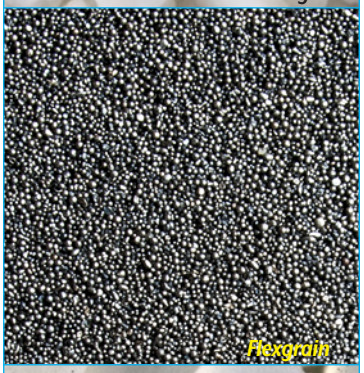
The hardness of media is a critical factor in almost every case. Usually reckoned by the Rockwell Scale or the mineral order of hardness (MOH Scale), it often expresses the “aggressiveness” of the material and its ultimate potential for surface modification. A particle of softer material, even when it is of greater size and density and propelled at a higher velocity, will be unlikely to alter the finish of a harder substrate. Hardness may determine whether a blast particle will deliver its energy with effect or absorb some of the impact energy by deformation or fracture. One of the best pieces of advice to guide in the selection of media is to know the hardness of your substrate.

Media breakdown

Finally, one of the keys to economical blasting is to consider the impact strength or fracture resistance of the material. This factor manifests itself in the attrition rate of media and your consumables cost, but it can also be an issue in terms of the generation of dust from the breakdown of media and the volume of waste material for disposal. Blast pressure or particle velocity plays a major part in the equation, but the fracture resistance of media under the conditions of use has a direct effect on the technical quality of surface preparation and the consistency of your surface finish. As previously mentioned, most of the materials used for outdoor blasting are highly friable and do not survive their first impact with the substrate.

Obviously, all of the properties of media that we have outlined must be taken together to determine the usefulness of any media for a given blasting application. Component material and the type of blast equipment to be used dictate certain media choices. Media selection is usually an educated process of elimination that should primarily be based on your technical surface finish requirements. Cost considerations for a particular choice, both in terms of media consumption and wear-and-tear on equipment, can be estimated to fill in the economic dimensions in your evaluation of alternatives.





Contacts

UK
Sales, Design and
Manufacturing Centre
Guyson International Ltd.
Snaygill Industrial Estate
Keighley Road, Skipton
North Yorkshire, BD23 2QR
Tel: +44 (0)1756 799911
email: info@guyson.co.uk
www.guyson.co.uk

France
Sales and Service Centre
Guyson SA
ZAC des Portes de l'Oise
2 rue Henri Becquerel
Bâtiment B7
60230 Chambly, France
Tél: +33 (0)1 30 28 43 16
Fax: +33 (0)1 39 37 87 71
email: contact@guyson.fr
www.guyson.fr

USA
Design and Manufacturing Centre
Guyson Corporation of USA
W.J. Grande Industrial Park
13 Grande Blvd.
Saratoga Springs
NY 12866-9090
Tel: +1 518 587 7894
Fax: +1 518 587 7840
email: info@guyson.com
www.guyson.com

Malaysia
Sales and Service Centre
Guyson SDN BHD
Shoplot 10, G/F Hotel Equatorial
1 Jalan Bukit Jambul
11900 Penang
Tel: +60 46 41 49 95
Fax: +60 46 41 50 03
email: kerrypg@guyson.co.uk

China
Sales and Service Centre
Guyson SDN BHD -
Wuxi Representative Office
28# Building, ZhenXin Road
Xing An, New District
Wuxi, Jiangsu Province
P. R. China
Postal code: 214000
Tel: +86 510 82790120
Fax: +86 510 82790120
email: zzlzhy@guyson.co.uk

FM 38758 OHS 595776

Guyson International

How do we select the right blast media?

Firstly, decide what the application fully requires. Are you removing deposits from the surface? Must the surface remain dimensionally stable? Is a fine etch or roughening effect required? Once the final effect is defined, then selection is made much easier.

The type of blast equipment available or being chosen will also have a bearing upon the type of media being selected. Compressed air systems, both suction and pressure fed can generally use most types of media whereas turbine wheel systems have a much smaller range available. However, the different characteristics of each of these types of blast system mean that the same blast media may react in a totally different way in each instance.

Dependent upon this effect, the appropriate blast media will be either harder or softer than the substrate of the object being blasted.

Some rules-of-thumb for blast media selection are the following:

1. **Choose the least aggressive media that will do the work. This will result in less wear and lower equipment maintenance expense.**
2. **Use the smallest media particle size that will do the work. More impacts per second will yield a faster process.**
3. **Find the lowest blast pressure that will do the work. This offers the benefits of energy savings in reduced compressed air requirements, as well as less wear and lower maintenance costs.**

Guyson offer an evaluation service for any new or existing application so that the best combination of blast media and equipment is determined without any assumptions being made. Prospective user of Guyson manual or automated blast systems are encouraged to submit sample components for free feasibility testing so that acceptable results on your own components can be assured. And with over 60 grades of media held at our demonstration centre we can quickly optimise the blast media and process settings to suit your specific components.

TYPE	GUYSON NAME	TYPE	GUYSON NAME
Abrasive	Saftigrit Brown	Plastic	Flashgrit
	Saftigrit White		Guyblast
	Saftigrit Pink		Guystrip
	Sinterball		Flashgrain
	Silicon Carbide		Flashbead
			Thermoflash
Glass	Honite	Metallic	Saftimetal
	Glassgrit		Turbogrit
Ceramic	Fused Zirconia		Turbobead
Natural	Loygrain		Flexgrain
	Walnut Shell		Flexgrit
Expendable	Iron Silicate		Turbonox
			Turbolloy
			Alusad