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Commercial Information

The Art of Powerful Cleaning...

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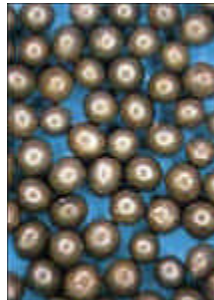
Title: Airblast Steel Shot / Grit

Airblast is proud to introduce a range of high quality Steel Abrasives (Steel Shot and Grit), manufactured by the world's largest producers of steel abrasives to SAE (Society of Automotive Engineers) specifications within the SAE J444 size tolerances ranges. The optimum abrasive for the majority of wheel blast applications, its durability and resistance to impact fatigue give the maximum cleaning efficiency at the most economical cost.

Airblast Steel Abrasives are also suited for shot peening applications where the shot is supplied in either standard or special hardness as well as for stone/marble cutting operations.



Poured from a direct-arc electric furnace the steel is propelled by a blast of water into a covered tank under a controlled gas atmosphere. This produces a more uniform chemistry of abrasive particles.

**The Process**

The Airblast Shot is actually a sphere-shaped form of steel casting. Shot is manufactured by pouring a molten mixture of premium grade steel scrap and select alloys through a series of water jets.

Upon contact with the water, the molten metal is atomized and forms into round particles in a controlled range of sizes. These particles then fall into a water tank, are dried, screened by size, quenched and tempered in a unique heat treatment process. This process assures superior control over the microstructure and hardness of the product prior to a final screening.

The Airblast Grit is made by crushing the fully hardened shot, screening the resulting media and tempering it to a desired hardness. As a cutting medium, hard Airblast grit is used in gang-saws to process granite blocks. In addition, the sharp angular form of grit makes it ideal for etching a textured surface on metal - thus enhancing its ability to bond paint, enamel, rubber or other coatings to the substrate.

Airblast Product Range

Airblast Steel Shot is a spherical product made of hypereutectoid steel that has been heat treated to a finally tempered martensite structure providing maximum breakdown resilience and thus extending product life.

Hard - cleans rapidly and efficiently

Resilient - has exceptional service life

Multiple Impacts - shot multiplies its efficiency by the ricochet effect. This increases the potential of the shot to reach surfaces which are inaccessible by direct blasting.

Round - formed during manufacture and remains round throughout its service life, providing; a well balanced operating mix minimum wear in the machine.

Steel Shot Size Ranges

Screen Opening Sizes and Screen Numbers with Max and Min Cumulative Percentages Allowed on Corresponding Screens.

Mesh No.	Screen Opening		Shot Number – SAE J444 Shot Tolerance													
	mm*	in.	S 1320	S 1110	S 930	S 780	S 660	S 550	S 460	S 390	S 330	S 280	S 230	S 170	S 110	S 70
4	4.75	0.187	All Pass													
5	4.00	0.157		All Pass												
6	3.35	0.132	90% min		All Pass											
7	2.80	0.111	97% min	90% min		All Pass										
8	2.36	0.0937		97% min	90% min		All Pass									
10	2.00	0.0787			97% min	85% min		All Pass	All Pass							
12	1.70	0.0661				97% min	85% min		5% max	All Pass						
14	1.40	0.0555					97% min	85% min		5% max	All Pass					
16	1.18	0.0469						97% min	85% min		5% max	All Pass				
18	1.00	0.0394							96% min	85% min		5% max	All Pass			
20	.850	0.0331								96% min	85% min		10% max	All Pass		
25	.710	0.0278									96% min	85% min		10% max		
30	.600	0.0234										96% min	85% min		All Pass	
35	.500	0.0197											97% min		10% max	
40	.425	0.0165												85% min		All Pass
45	.355	0.0139												97% min		10% max
50	.300	0.0117													80% min	
80	.180	0.0070													90% min	80% min
120	.125	0.0049														90% min
200	.075	0.0029														
J.I.S.			-----	-----	S 280	S 240	S 200	S 170	S 140	S 120	S 100	S 80	S 70	S 60	S 40	S 30

Airblast Steel Grit is an angular product made from selected and heat treated stock that is processed through high efficiency crushers and graded to size. Efficient crusher processing reduces surface cracking in the material and provides a superior product. Airblast Steel Grit is used mainly in Wheelblast machines for cleaning or preparation work. The AGL and AGH Steel Grit are equally suitable for use in Wheelblast machines as well as in Blastrooms.

AGH Steel Grit

With a maximum hardness of 68 HRC it maintains it's angularity during operation and provides a constant cutting (etching) action. This product is designed specifically for air blast operations.

AGL Steel Grit

At 55 to 60 HRC this product is harder than AGS Steel Grit. It loses sharpness during operation and is suited to plate and section preparation.

AGS Steel Grit

Rapidly loses sharpness due to it being softer than AGH and AGL Steel Grit. Hardness is 40 to 55 HRC. It is suited to new plate and section preparation.

AMIX is a specially developed mix of shot and grit used for operations where a high production rate with minimal on site control is required. High production foundries are an ideal user of this product.

ACUT is a granite cutting abrasive made from specially sized and treated shot and grit. Optimal shape and durability ensure maximum cutting efficiency.

Steel Grit

Screen Opening Sizes and Screen Numbers with Max and Min Cumulative Percentages Allowed on Corresponding Screens.

Mesh No.	Grit Number – SAE J444 Grit Tolerances													
	mm*	in.	G 10	G 12	G 14	G 16	G 18	G 25	G 40	G 50	G 80	G 120	G 200	G 325
4	4.75	0.187												
5	4.00	0.157												
6	3.35	0.132												
7	2.80	0.111	All Pass											
8	2.36	0.0937		All Pass										
10	2.00	0.0787	80%		All Pass									
12	1.70	0.0661	90%	80% min		All Pass								
14	1.40	0.0555		90% min	80% min		All Pass							
16	1.18	0.0469			90% min	75% min		All Pass						
18	1.00	0.0394				85% min	75% min		All Pass					
20	.850	0.0331												
25	.710	0.0278					85% min	70% min		All Pass				
30	.600	0.0234												
35	.500	0.0197												
40	.425	0.0165						80% min	70% min		All Pass			
45	.355	0.0139												
50	.300	0.0117							80% min	65% min		All Pass		
80	.180	0.0070								75% min	65% min		All Pass	
120	.125	0.0049									75% min	60% min		All Pass
200	.075	0.0029										70% min	55% min	
325	.045	0.0017											65% min	20%
J.I.S.			G 240	G 200	G 170	G 140	G 120	G 100	G 70	G 50	G 30	G 20	-----	-----

Choosing The Correct Abrasive Medium

The medium used in a cleaning or peening operation is the most important factor. It is therefore vital to select the correct size, shape and hardness for the particular requirements specified.

Hardness / Toughness

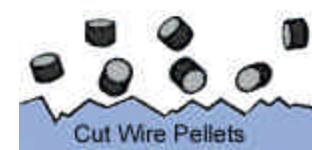
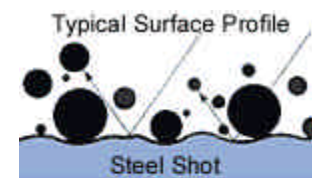
The degree of hardness required is determined by the speed of clean required, the type of contaminant to be removed, the surface finish and profile required and the operational costs involved.

Abrasive hardness is important because hardness, by definition, is resistance to deformation. So the harder the pellet, the less it deforms and the more it performs useful work in deforming the work surface. However, energy is wasted in the fracturing of pellets so there is no advantage in using an abrasive which is hard, but also extremely brittle. Maximum hardness combined with a low breakdown rate is required for optimum results. Abrasive hardness correlates directly with cleaning speed in that the harder the abrasive, the faster it cleans. Hardness is also an important factor in cleaning quality, particularly when the work is intricate and has deep cavities. The harder the abrasive shot, consistent with lack of brittleness, the greater its ability to ricochet. Areas of parts that cannot be cleaned by the direct blast depend on rebounding abrasive for adequate cleaning. Abrasive hardness, therefore, is an important factor in cleaning economy because it determines the length of cleaning cycles and the quality of the resulting finish.



Shape

The particle shape is determined by surface finish and profile requirements, type of contaminant to be removed and prevention of distortion through peening. The shape of an abrasive when new is not always the same as when in the operating mix. Steel shot remains round throughout and, therefore, produces minimum wear in the machine. Most grits remain angular to give an effective etching action, though AGP grit rapidly changes from angular to round when in use, thereby combining the performance capabilities of both grit and shot. Cut wire pellets are cylindrical when new, but round off during service. AGL grit remains angular, but loses its sharp edges during service optimising rapid cleaning without excessive wear in the plant. It can be seen, therefore, that the shape of the pellet is an important factor, particularly in respect of how that shape behaves during service.



Size

Given that impact treatment is based on kinetic energy, it follows that selecting a large pellet will give a greater impact than a small one and vice versa. The initial size selection, therefore, is very important for the process. The abrasive supplied by the manufacturer is predominantly one size. The size range in the operation is known as the 'operating mix' and consists of the nominal size shot or grit and the worn particles (shot) or broken down particles (grit). It includes pellets that, during the operation, become polished, work hardened and conditioned during their life developing into an optimum cleaning, or peening tool. The operating mix provides a balance of particle sizes for impact and coverage. Impact is provided by the new abrasive or larger size pellets to remove heavy contaminant and coverage is provided by the medium and smaller pellets to remove light contaminant and, more importantly, to give the final finish to the work processed.

This smooth finish is aesthetically pleasing and minimises the amount of material required for subsequent surface coatings, whilst retaining the required adhesion factor. This balance between impact and coverage is important and can only be maintained by regular additions of new abrasive, preferably at the abrasive breakdown rate, by the wheel hour or by the golden rule of 'little and often'. It is also necessary to return back to the system any abrasive losses or carry-out from the machine. The smallest grade of abrasive capable of removing the heaviest contaminant, should be used. As a result, the number of particles per kg thrown will be higher, coverage will be improved, cleaning will be faster and blast time will be reduced. Economics are thus achieved in energy, wear and tear of equipment, abrasive consumption and reduced maintenance. To ensure such benefits with cast iron abrasives, the specification should always be the largest particle that will not cause damage to the component being cleaned.

Choosing the correct abrasive, with the right shape, size and hardness, and maintaining the optimum operating mix are the most important elements in controlling costs. There are, however, other factors that must be taken into account if maximum efficiency is to be achieved.

The Applications - Steel Shot / Steel Grit

Automotive	Railroad
Aerospace	Shipyard
Agriculture	Stone cutting
Construction	Office machine
Foundry	Petrochemical
Mining	Various other major industries

- As a blast cleaning medium, shot, grit, or a mixture is used to remove various forms of surface contamination from a broad spectrum of steel or foundry products.
- In a peening application, Airblast shot is used to impart compressive strength to torque or load bearing metal parts, such as jet engine turbine blades, automotive springs, or heavy equipment crankshafts.
- As a cutting medium, hard Airblast shot and grit is used in gang-saws to process granite and marble blocks.
- In addition, the sharp, angular form of grit makes it ideal for etching a textured surface on metal - thus enhancing its ability to bond paint, enamel, rubber or other coatings.

Quality Control

Airblast steel abrasives are produced with the use of the first cam sizing and shape imaging systems ensuring optimal sizing and distribution control. The latest laboratory equipment are utilized in the production process.

- Latest micro testing equipment
- Test blasting capability
- Particle fatigue testing
- Micro hardness testing
- Variable impact durability test
- Spectrographic analysis
- Metallographic analysis

Airblast Customer Support

Airblast is committed to total quality. The total quality concept applies not only to the manufacturing and distribution processes, but also include our relationship with our customers.