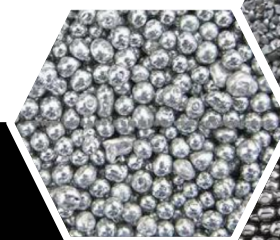
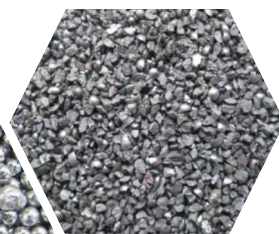


ABRASIVES

For Shot Blasting and Surface Preparation

Steel Grit



Zinc Shot



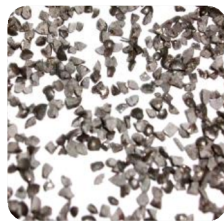
Steel Shot



Steel Abrasives for Shot Blasting Process



Steel Shot



Steel Grit

Chemical Composition		Properties	Shot	Grit
C =	0.80 - 1.20 %	Density	> 7.00 g/cc	
Si =	> 0.40 %	Microstructure	Uniform Martensite	
Mn =	0.35 - 1.20 %	Hardness	40 - 51 HRC.	GH = > 60 GL = 50 - 60 GP = 40 - 51
P =	< 0.050 %			
S =	< 0.050 %			

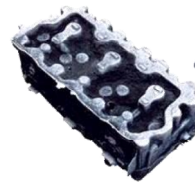
As per SAE International Standards J 444 & J 827 & J 1993

Size Distribution

Mesh No.	Sieve (mm.)	Shot Number										
		S-780	S-660	S-550	S-460	S-390	S-330	S-280	S-230	S-170	S-110	S-70
7	2.800	All pass										
8	2.360		All pass									
10	2.000	85 % min		All pass	All pass							
12	1.700	97 % min	85 % min		5 % max	All pass						
14	1.400		97 % min	85 % min		5 % max	All pass					
16	1.180			97 % min	85 % min		5 % max	All pass				
18	1.000				96 % min	85 % min		5 % max	All pass			
20	0.850					96 % min	85 % min		10 % max	All pass		
25	0.710						96 % min	85 % min		10 % max		
30	0.600							96 % min	85 % min		All pass	
35	0.500								97 % min		10 % max	
40	0.425									85 % min		All pass
45	0.355									97 % min		10 % max
50	0.300										80 % min	
80	0.180										90 % min	80 % min
120	0.125											90 % min
200	0.075											

Steel Shot Application

- Removal of sand and other surface contamination from steel and iron casting, cast pipes, malleable fittings copper and aluminium alloy castings and other general foundry products.
- Descaling of forged steel products and heat-treated products.
- Shot peening for automobiles parts, aircraft components, railway casting, all sorts of gears, super hard steel chips, various tools.



Before



After



Before



After

Size Distribution

Mesh No.	Sieve (mm.)	Grit Number										
		G-10	G-12	G-14	G-16	G-18	G-25	G-40	G-50	G-80	G-120	If any
7	2.800	All pass										
8	2.360		All pass									
10	2.000	80 %		All pass								
12	1.700	90 %	80 %		All pass							
14	1.400		90 %	80 %		All pass						
16	1.180			90 %	75 %		All pass					
18	1.000				85 %	75 %		All pass				
20	0.850											
25	0.710					85 %	70 %		All pass			
30	0.600											
35	0.500											
40	0.425						80 %	70 %		All pass		
45	0.355											
50	0.300							80 %	65 %		All pass	
80	0.180								75 %	65 %		
120	0.125									75 %	60 %	
200	0.075										70 %	

Steel Grit Application

- Removal of rust and other surface contamination from steel structure, steel plates, steel billets, and other general construction.
- Surface etching as the pre-treatment for painting coat, various metallic plating and for metal spraying.
- Cutting granite blocks by gang-saws in granite industry.
- Surface roughing of stones and concrete blocks.



Before



After



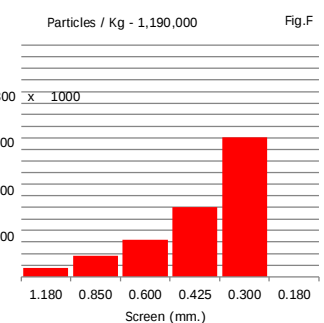
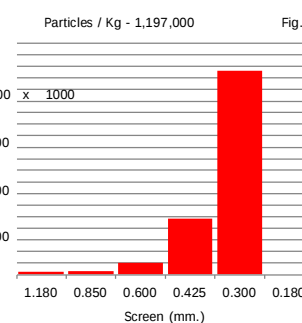
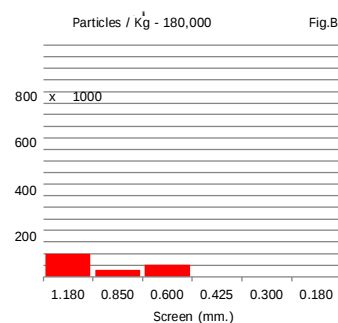
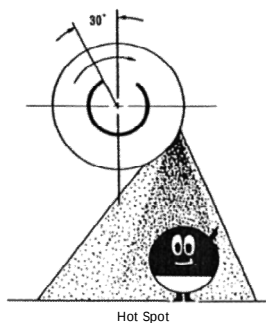
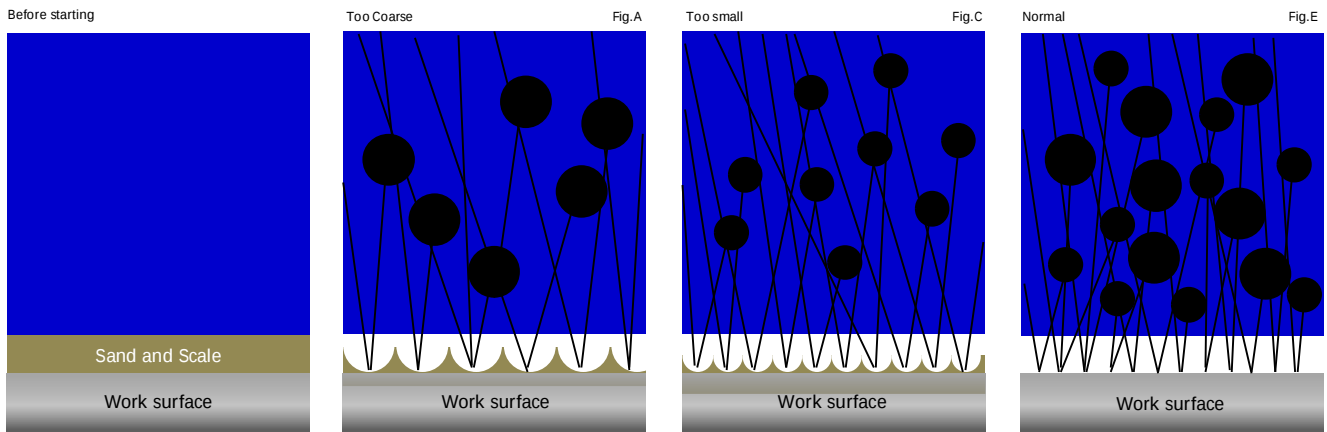
Before



After

The key for improving the efficiency of blasting operations and cost reduction

1) Controlling the Operating Mix



2) Controlling the blasting work

The material to be blasted should get the abrasive blasting.

Watch the Ammeter



At Full Load
(Varies according to motor power)
Wheel is throwing maximum abrasive volume

For full cleaning power

Operating Mix compound of large grains having mass to remove contaminants. However, it creates coverage failure (Fig.A) due to the low number of particles / kg (180,000 Fig.B). The blasting cycles become longer trying to get an adequate coverage which causes high consumption of steel abrasives, energy, spare parts and productivity dropping.

Operating Mix compound of small grains provides surface coverage due to high number of particles / kg (1,197,000 Fig.D) but do not have sufficient mass to remove contaminants (Fig.C). Also in this case, blasting cycles become longer trying to get an adequate removal of contaminants, however the consequences are inadequate cleaning, costs increasing and productivity dropping.

Operating Mix compound of all grain sizes and a large amount of particles / kg (1,190,000 Fig.F) by removing all contaminants in surface coverage (Fig.E) can reduce the blasting cycles.
Results : lower consumption of steel abrasives and energy, longer life os spare parts and productivity gains.

3) Blasting at full load

The total use of steel abrasive flow thrown by the wheel results in perfect cleaning and less blasting cycles.

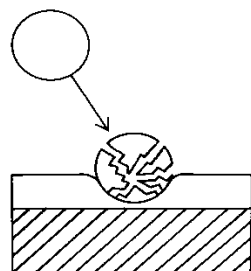
The shot blasting machine is designed to form the Operating Mix if it is properly operated :

- Supply of new steel abrasive : Frequent additions according to the proportional consumption.
- Adequate exhaustion in order to remove only steel abrasives below the smallest size contained in the operating Mix (see chart of size).
- Prevention of losses due to the accumulation of steel abrasives inside the processed parts.
- Prevention of losses due to leakage in the equipment.

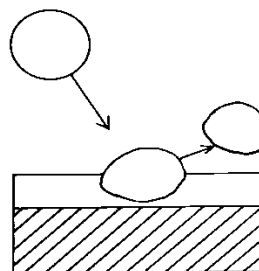
Relation between Hardness & Lifetime of Blasting Abrasives

Hardness and Cleaning Effect

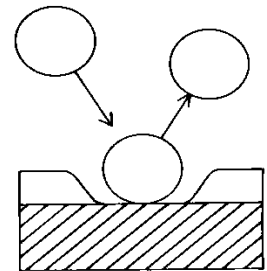
too hard (brittle)



too soft

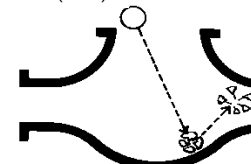


appropriate hardness

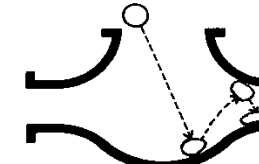


Hardness and Rebounding Property

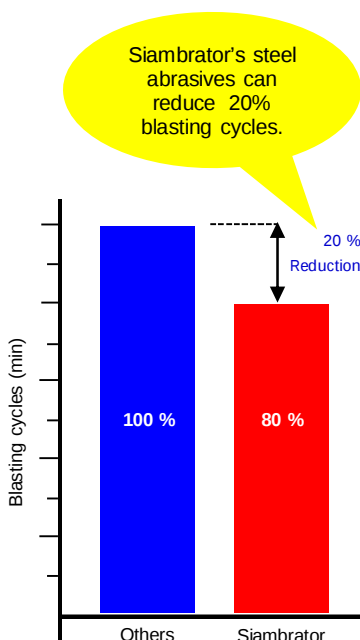
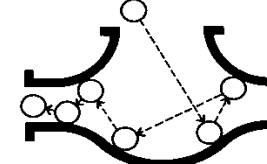
too hard (brittle)



too soft

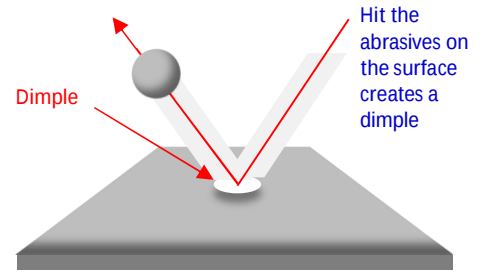


appropriate hardness



Shot Peening

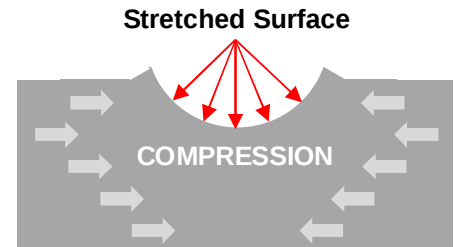
Shot peening is a cold working process in which small spherical media called shot bombard the surface of a part. During the shot peening process, each piece of shot that strikes the material acts as a tiny peening hammer, imparting to the surface a small indentation or dimple. To create the dimple, the overlapping dimples from shot peening create a uniform layer of compressive stress at metal surfaces, shot peening provides considerable increases in part life. Compressive stresses are beneficial in increasing resistance to fatigue failures, corrosion, cracking, fretting, galling and erosion caused by cavitation.



Case of Actual Application

Die for cold forging (SKD11)	About 6.0 times longer
Die for cold forging (YXR 3)	About 5.0 times longer
Die for hot forging (SKD61)	About 2.5 times longer
Die for cold forging (SKH 9)	About 2.0 times longer
Die for cold forging (SKD61)	About 2.0 times longer

Above data are for reference only, and are subject to differ in accordance with the processing parameters such as projection velocity, angle and the characteristics of peening shot.



Shot peening is used on gear parts, cams and camshafts, clutch springs, connecting rod, crankshafts, gearwheels, leaf and suspension springs, rock drills and turbine blades. It is also used in foundries for sand removal, decorating, descaling and surface finishing of castings such as engine blocks and heads. Its descaling action can be used in the manufacturing of steel products such as strip, plates, sheets, wire and bar stock.



Standard Specification of Peening Shot

Size Distribution

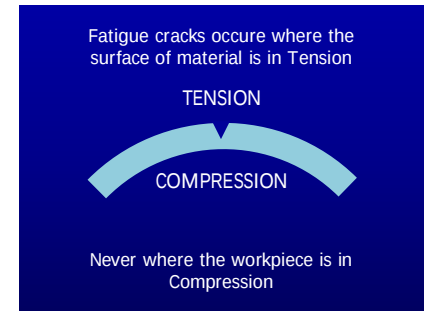
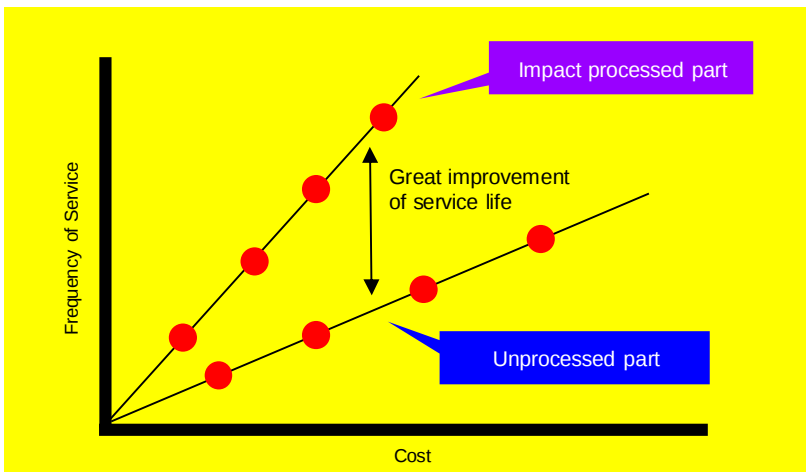
Mesh No.	Sieve (mm.)	S-330 SB-10P	S-280 SB-8P	S-230 SB-6P	S-170 SB-4P	S-110 SB-3P	S-70 SB-2P
16	1.180	5 % max					
18	1.000	65 % min	5 % max				
20	0.850	90 % min	65 % min	5 % max			
25	0.710	98 % min	90 % min	65 % min	10 % max		
30	0.600		98 % min	90 % min			
35	0.500			98 % min		10 % max	
40	0.425				85 % min		
45	0.355				97 % min		10 % max
50	0.300					80 % min	
80	0.180					90 % min	80 % min
120	0.125						90 % min

Hardness

Type	Average Hardness
P	47 $\pm$ 3 HRC
M	53 $\pm$ 3 HRC
H	58 $\pm$ 3 HRC

Characteristic

The peening shot of Siambrator satisfied all requirement of impact treatment such as uniform hardness and shape, consistency in size, high resistance to fracture, free of interior defects, etc.



Benefits obtained by Siambrator shot peening are :

- Increase the material fatigue life.
- Prevents stress corrosion and cracking of metal plates from opening on the workpiece surface.
- Enhances wear resistance which help workpiece to get longer life, light weight and better quality.

Zinc Shot

Application

Zinc shot is a blasting abrasives manufactured from pure zinc, used primarily in the die casting manufactured from zinc, aluminum, manganese or other soft alloys for deburring, cleaning, descaling and finishing.

Excellent Deburring

Zinc is 2.5 times dense than aluminum. This density increased its deburring capability. Where aluminum shot removes burrs up to 0.3 mm. thick Siambrotor's zinc shot easily removes burrs up to 0.5 mm. thick.



Aluminium Die casting Parts

Shot type		AZ-15	AZ-10	AZ-6	Aluminum
Size		1.5 mm.	1.0 mm.	0.6 mm.	1.0 mm.
Velocity		45 m/s	45 m/s	45 m/s	73 m/s
Thickness of Burr	0.3 mm	OK	OK	OK	OK
	0.4 mm	OK	OK	X	X
	0.5 mm	OK	X	X	X
	0.6 mm	OK	X	X	X

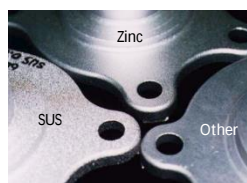
Shot type		AD-12	SUS-8	AD-8	SUS-6
Size		1.5 mm.	1.0 mm.	0.6 mm.	1.0 mm.
Velocity		50 m/s	50 m/s	45 m/s	73 m/s
Thickness of Burr	0.2 mm	OK	OK	OK	OK
	0.3 mm	OK	OK	OK	OK
	0.4 mm	OK	OK	OK	OK
	0.5 mm	OK	OK	X	X

High Saving

Labor cost is reduced. With aluminum shot, burrs with a thickness greater than 0.3 mm. must be removed by hand. The superior finishing action of our safety shot makes such manual deburring unnecessary.

Energy cost is reduced by 30 - 40 % because of Siembrator's zinc shot, the speed at which it is projected onto the work surface can be reduced by about half that required for aluminum shot of the same size.

Higher density zinc shot requires 1/2 blasting velocity of aluminum shot which results in less consumption of shot.



Sample of finished product blast with
Zinc Shot



Before

After

Blasting Effect Comparison Among Various Blasting Abrasives

Type of abrasives	Hardness (HV)	Specific gravity	Bulk Density	Consumption rate	Deburring effect	Safety	Finish tone	Abrasion on machine
AZ	40-50	7.1	4.2	Slightly lower	Slightly higher	High	Normal	Low
AZs	50-60	7.1	4.2	Slightly lower	Slightly higher	High	Normal	Low
AD	85-100	7.2	4.2	Slightly lower	Slightly higher	High	Normal	Low
SUS	440-480	7.7	4.5	Low	High	Slightly risky	Whitish	High
Fe	440-480	7.5	4.4	Slightly lower	High	Slightly risky	Normal	High
AC	40-50	2.7	1.5	High	Low	Risky	Whitish	Low
AS	115-130	2.7	1.5	High	Low	Risky	Whitish	Low



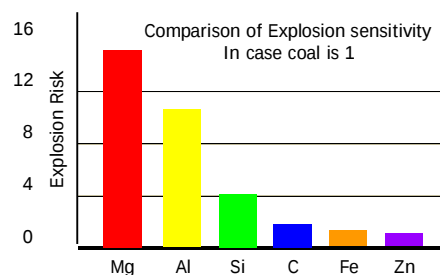
Take advantage of these saving
by using Sinto Zinc Shot

Minimize Explosion Risk

The explosives nature of aluminum dust has caused explosion accidents. Siambrator's zinc shot is made from zinc which greatly reduces the risk of explosions. With Siambrator's zinc shot, the risk of explosion is only 1/10 of aluminum shot.



Explosion of Dust Collector



Size Distribution

[illegible]

SERVICE

The best abrasive for shot blasting applications

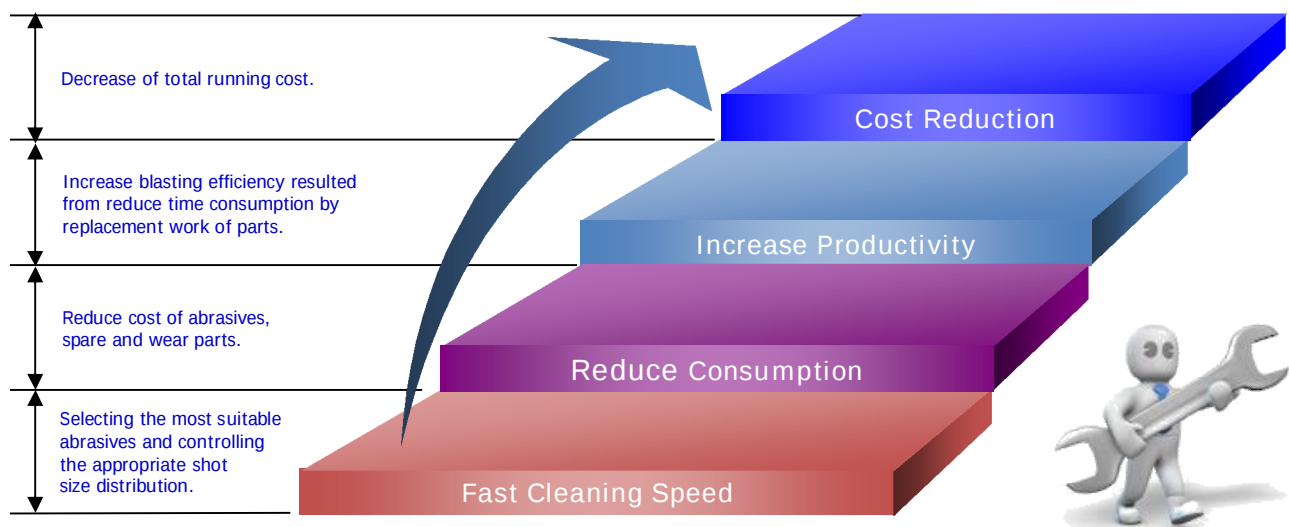
The Key for improving the efficiency of blasting operations and cost reduction lies in learning how to make good use of shot blasting machine and abrasives effectively.



Siambrator can provide a great merit to the customer by offering "3 in 1" service, providing equipment, media and consumable parts, and maintenance support for the safe and stabilized operations as a total 1 package.

It is a comprehensive system of optimized use of surface treatment technologies that includes three main elements :

- Technologies and equipment.
- Abrasives media, wear resistant consumable parts and know how.
- Maintenance and customer service.



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Call us and ask for a visit :

