



**ACTON<sup>®</sup>**  
ADDITIVE

we redefine  
**Additive Manufactured  
Components  
Polymers**

**NORMFINISH<sup>®</sup>**  
SURFACE TREATMENT

[www.acton-finishing.co.uk](http://www.acton-finishing.co.uk)

# We're the UK's leading experts in providing effective post processing solutions for the additive manufacturing industry.

## we redefine:

- Vibratory Finishing
- High Energy Finishing
- Shot Blasting
- Consumables
- Precision Polishing
- Subcontract Services

## Why Choose Us?

We're a family run business that pride ourselves on working as a strong, unified team of specialists.

### We believe in British

Born in the United Kingdom, we are unique in our product design and the manufacture of our specialist machines and consumables.

### We're here for you

Being based in the heart of the country means we have easy access to all of our clients.

### We have experience

With five decades of experience and knowledge in the finishing industry, we know what works for you.

### We provide options

We have an impressive range of media and compounds to choose from, including one of the best polishing compounds in the market. We also provide a wide range of machinery and subcontract services to meet all of your needs.

### We go the extra mile

We'll tailor our services to your needs, not the other way round. Our service is all about you.

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before

after



3d printed polymer part after the vibratory finishing process



3d printed automotive parts after the vibratory finishing process



## SURFACE FINISHING ADDITIVE MANUFACTURED COMPONENTS

**Additive Manufacturing (3D Printing) is now an established technology for prototyping and production. Selecting the most suitable surface finishing technology is critical to prove the viability of components from a cost and functional standpoint. In an ideal world, surface finishing must be considered when designing components for AM to ensure the desired component and its characteristics can be achieved.**

### Surface Finishing Polymer 3D Printed Parts

A range of materials are used when 3D printing metals.

Processing of 3D printed parts, manufactured via Selective Laser Sintering (SLS), Stereolithography (SLA) or Fused Deposition Modeling (FDM) to improve the surface appearance and smoothing can be challenging. These parts tend to have a textured surface and require improvement of surface roughness

In order to improve the appearance, surface roughness and mechanical properties of additive manufactured parts, post processing remains an important factor.

Our range of technologies are available as standalone machines or can be integrated as fully automatic systems. Our aim is to ensure our customers understand the main advantages of each technology.

## AM Blasting for Powder Removal

For a polymer metal additive manufacturing process, firststep often involves removing the residue left from the 3D printing process.

The AM Blasting technology has been designed to remove residue, even from parts with complex geometries, in an efficient way.

### AM Blasting Excel Series

The AM Blasting Excel depowdering system is a perfect solution for processing big volumes of 3D printed parts, on a high frequent basis. This machine is PLC controlled and includes 20 different recipes.

#### Key Features and Benefits

- Guarantees process repeatability. Industry 4.0 Ready.
- Integrated ionization (ATEX) ensures cleaner dust free products.
- Automatic adjustable basket angle.
- 3D printed parts with different geometries can be processed.
- Easy load and unload via the front door.
- Media and dust stays inside the cabinet.
- Includes separate manual blasting station, equipped with 1 blast pistol
- ATEX certified for processes class II 3/-D T125°.



before



after



## AM Blasting Smart Series

The AM Blasting Smart series is suitable for blasting large print volumes on a regular basis. The large basket with 2 blasting nozzles enables series production of up to 30 L at a time. Automatic blasting system for blasting small/medium parts with an option for manual blasting of large parts.

#### Key Features and Benefits

- PLC controlled.
- Integrated ionization (ATEX) unit ensures cleaner, dust free parts.
- Fixed basket angle.
- Loading and unloading outside cabinet.
- Integrated manual blasting.
- Equipped with a cyclone to remove dust & powder from the blast media.
- ATEX certified for processes class II 3/-D T125°
- Easy to use & low maintenance costs.
- Reliable and repeatable finish each time.



## AM Blasting Solid Series

The AM Blasting Solid Series is the entry-level model for automatic blasting of powder bed printed parts. Suitable for finishing small print volumes on a regular basis. This blasting installation blasts small parts automatically and has the possibility for manual blasting of large parts.

#### Key Features and Benefits

- PLC controlled.
- Up to a volume of 10 L
- Manually adjustable basket angle.
- Integrated manual blasting.
- Equipped with a cyclone to remove dust and powder from the blast media.
- ATEX certified for processes class II 3/-D T125°
- Easy to use and low maintenance costs.
- Reliable and repeatable finish each time.



Click [here](#) to request a Free Trial!

## » SURFACE FINISHING & POLISHING

**Most additive manufactured parts require some surface improvement to ensure that they are in an acceptable condition for the end-user.**

At ActOn Finishing we understand the importance of surface finishing for polymer additive manufactured parts & have worked closely with major manufacturers across different industries to adapt and develop finishing solutions that meet their stringent requirements. It has been proven that the solutions we've developed have benefited the industry by reducing processing times and producing a repeatable and quality product.

### Surface Finishing Processes Deliver Repeatable Results

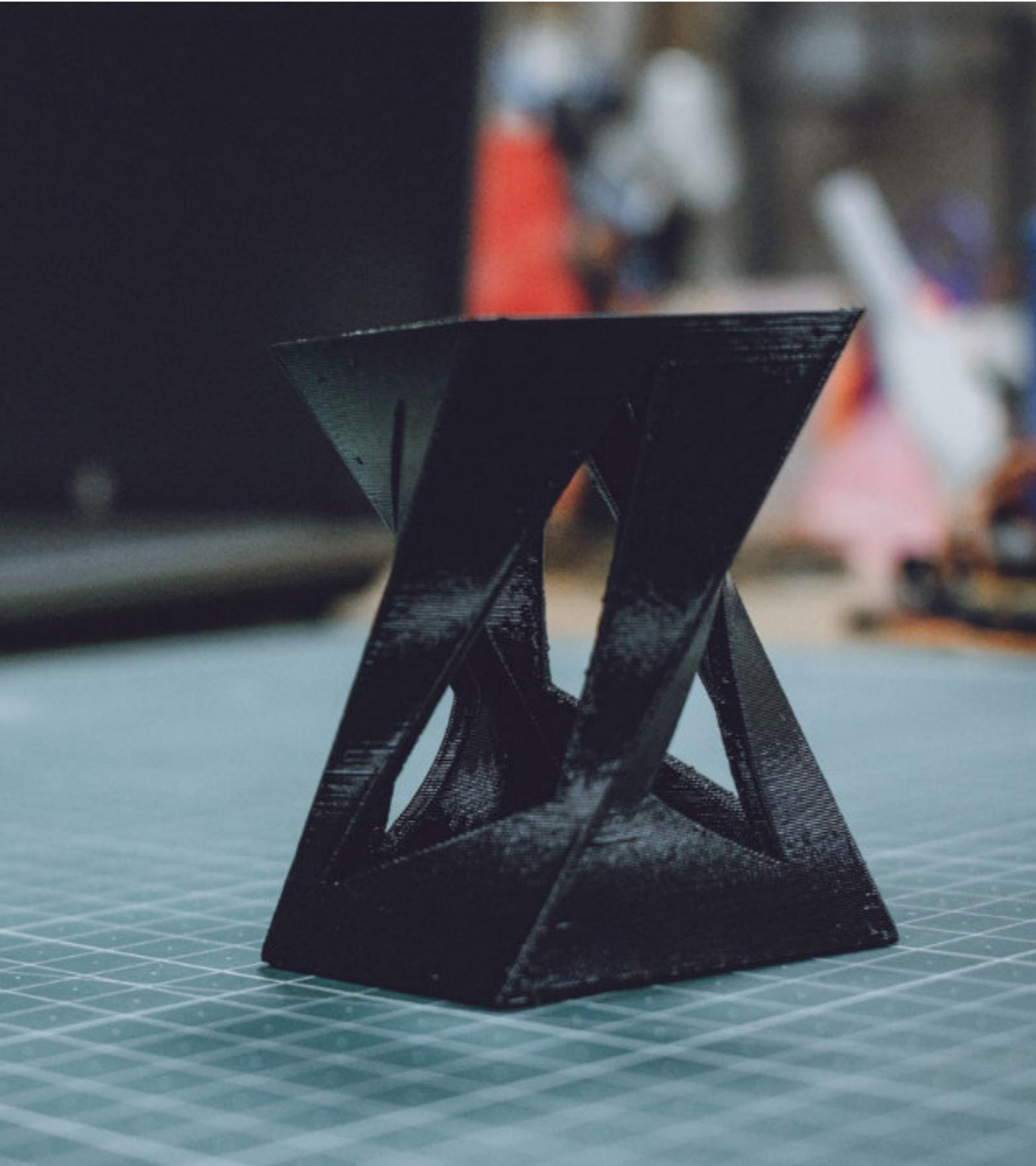
Manufacturing companies usually implement mass finishing techniques in their processes for the economic advantages and the consistent results achieved. Manual finishing processes are known to be labour intensive, with the disadvantages of rework, high rejection rates, and inconsistent results. Having identified these issues, we offer a wide range of unique solutions that improve current processes, achieving the repeatability and quality desired by manufacturers.

### ActOn Research and Development

We are continually evolving our processes and machines making them more effective. We also have academic connections throughout the United Kingdom and around the world, who help facilitate our Research and Development department. At our headquarters in Coventry, we house various metrological equipment to ensure that our customers' requirements are met and exceeded.

With projects involving modal and dynamic FEA analysis of our finishing machines and the persistent gathering of empirical data on our various compounds, medias and machines, we strive to design and optimise everything we do to a high standard.





## »» | Finishing Process Results

Below results are based on the finishing processes we have developed for our clients, on various polymer additive manufactured parts.

	Average Ra before finishing process (µm)	Average Ra after the finishing process (µm)	Average finishing the process time (min.)
Vibratory Finishing	6.97	1.16	480
Vibratory Finishing	13.05	2.46	480
Vibratory Finishing	13.25	1.33	480
CDF Machine	7.23	0.88	240
CDF Machine	7.56	1.23	240

Note:  
A combination of process technologies may be required for optimal results.



Ra Before: 13.25 µm



Ra After: 1.33 µm



## » Vibratory Finishing Range

Vibratory finishing is perhaps the most commonly used mass finishing method to help smoothen AM polymer parts. The gentle action in the machine allows for processing gentle and fragile parts, whilst still being able to achieve a good reduction in surface finish. The advantage of the vibratory finishing machines is that although the process time can be quite long (2-8 hours depending on start condition and required finish), high volumes of parts can be processed which means these machines are ideal for anyone looking to finish medium/high volumes.

### Vibratory Finishing Bowls

Each of our Bowls are simple to operate and highly efficient, manufactured in classic designs & sizes to meet applications, such as smoothing, surface improvement, remove printing flaws (like faceting lines and orange peel), deburring, descaling, radiusing, cleaning and polishing.

#### Key Features and Benefits

- Wear resistant casted hot cured polyurethane lining.
- Acoustic lid for noise reduction.
- Flap clearing system.
- Inverse separation.
- Undersized media separation.
- Single and Variable speed motor.
- Powerful drive system with sealed bearings for maintenance-free running.
- Flyweights set for optimum action in bowl.
- Bench top options available.
- British high-quality product.
- Very quiet machine in operation due to the acoustic lid.
- Wear-resistant lining.
- Easy to operate.
- Low maintenance.



## Vibratory Finishing Troughs

We offer Troughs in many different sizes and an infinite choice of length and width combinations, making them one of our most versatile. These are particularly useful for larger components.

#### Key Features and Benefits

- Wear resistant casted hot cured polyurethane lining.
- Acoustic lid for noise reduction.
- Single and variable speed drive.
- Powerful drive system with sealed bearings for maintenance-free running.
- Unload door for complete discharge of media and parts.
- Compact design.
- Divider plates to remove risk of impingement.
- Painted or Stainless Steel side panels available.
- Portable options available.
- British high-quality product.
- Simple to operate and highly efficient.
- Wear-resistant lining.
- Easy to operate.
- Low maintenance.

Click [here](#) to request a Free Trial!



# Automated Vibratory Finishing Systems

## Finishing Solution for Low Volume Additive Manufactured Parts

Our SPU-1 is ideally suited for small batch works and delicate components, which can be used as either a batch or a continuous system. This vibratory finishing system is perfect for deburring, descaling, degreasing, cleaning, smoothing, radiusing, polishing and drying. This is both an excellent and economical finishing option.

### Key Features and Benefits

- Portable unit.
- Built in compound recirculation system.
- Water/compound can be filled from the side of the machine.
- Available in 3 phase and 1 phase.
- Compact design
- British built high-quality product
- Efficient in operation
- Quiet in operation
- Operator friendly controls



## VB10P Vibratory Finishing System

This Vibratory Finishing System has been designed to ensure 100% unload of media and components from the finishing machine, while reducing manual handling and achieving a consistent finish every time.

### System Description

This vibratory system allows the operator to set up the process parameters and easily control the process. Once the process starts, a set batch of parts are loaded into the vibratory finishing bowl via a conveyor.

At the end of the process the bowl's pneumatic media door opens allowing the parts and media to be discharged in a storage hopper. This stage ensures 100% unload of media and parts from the finishing machine. After the parts and media have been unload the pneumatic door closes to allow a new finishing process to begin.

The system also includes a vibratory separator which enables the separation of parts from media. The undersized media falls through a separation grid and is filtered from the system, while the rest of the media returns into the vibratory bowl through a conveyor. The finished components are transferred

from the vibratory separator to a conveyor and discharged in the packing area.



## » Mass Finishing Range

### CDF Series

The CDF machine is perfect for processing small & thin components as well as larger parts with a length of up to 150mm. Centrifugal disc finishing can allow for reduced processing times of polymer AM parts when compared with standard methods (reducing process times by over 50%). Naturally this is down to the more “aggressive” action in the machine. It is worth noting that not all components will be suitable to the disc machine, namely fragile components or heavy/long components. However, for anyone with small/medium sized components, they may see a real benefit in throughput using this machine.

### Key Features and Benefits

- Manual and auto gap area adjustment functionality.
- Temperature sensor to detect high temperature and protect the gap area.
- Stainless steel upper and lower ring for higher wear resistance.
- Manual/ auto functionality.
- Efficient in operation
- Faster than vibratory finishing machines
- Operator friendly controls
- Low maintenance
- Good value for money as it implies a reduced capital investment
- Proudly manufactured in Great Britain



### CLM Series

The CLM machine consists of clamping workpieces inside the process chamber which is driven by two or three strategically placed motors. The spiral, intensive action inside the process chamber allows for components with hard to reach areas to be finished. Mounting the work pieces ensures no part on part contact and the finishing intensity can be precisely controlled by adjustment of the speed and motor angles. The machine is suitable for achieving a highly polished finish on additive manufactured parts. The CLM machine has been designed to be simple to operate and produce excellent results.

### Key Features and Benefits

- Wear resistant polyurethane lining.
- Pneumatic loading and unloading of parts.
- Compact design.
- Drive system with sealed bearings for maintenance-free running.
- Standard control panel to control machine functions including isolator, on/off controls and timer.
- Speed control.
- Quiet in operation.
- Great for achieving a homogenous surface.
- No damage to workpieces.
- Hard to reach areas of components can be accessed.
- Adjustable finishing intensity Design includes system to clamp 3D printed parts with different sizes. Reliable and repeatable finish each time.
- Low maintenance.
- Cost and time saving.
- Various sizes of parts can be processed.
- Durable machine due to design, good quality materials & workmanship knowledge.

Click [here](#) to download our Vibratory Finishing brochure for further technical information.



## » Case Study

### Cost Effective Vibratory Finishing Solution for Processing Selective Laser Sintering Parts.

#### About this project

ActOn Finishing developed a vibratory finishing solution to smooth 3D printed polypropylene parts, manufactured by Ricoh UK Products. These components are made via Selective Laser Sintering.

As the customer manufactures Selective Laser Sintering parts in different shapes and sizes, they were interested in purchasing a Vibratory Finishing system that can accommodate these parts and which would help them achieve a smooth surface finish to offer added value to their customers.



#### What we did

The polypropylene samples we were provided by Ricoh to test included rotary atomizer head, rotary atomizer hub, adhesion samples, tension rod, VW bumper components, wing mirrors and automotive exterior trim. The initial surface roughness of these parts ranged between 3.6 microns to 13 microns.

We carried out two trials using our Vibratory Finishing machines. Using a highly abrasive ceramic media and a concentrated liquid compound, that acts like a cleaner and polisher, we finished the 3D printed parts in our Vibratory Bowl machine, for 20 hours. Visually the finished parts looked good, had no damages and the Ra was between 0.5 and 3 microns.

Proving that Vibratory Finishing is the way to process parts, manufactured via selective laser sintering, we decided to also test the finishing process in an ActOn Trough Vibratory Finishing machine. As Ricoh also manufactures larger and longer parts, the Trough finishing machine would give them the flexibility to process all types of parts, due to the shape of the process chamber. The trial proved to be a success showing an improved surface finish.

## Results

Taking the rotary atomizer head as the example the Ra value started at 7.2 Microns. After the 4 hours process, in the Trough machine, this was reduced to 5.9 Microns and then to 3.681 Microns in 8 hours. There were no sign of contamination and part looked good visually.

We discovered that a finishing process between 8 and 20 hours can result in damaging the thinner wall sections of the part. Therefore, we recommended Ricoh UK Products a finishing process between 4 and 8 hours in ActOn Vibratory TUg machine using mix sizes of the abrasive ceramic media, the concentrated liquid compound for cleaning and polishing and water.

We suggested that the TUg finishing machine should be used with a divider plate, to create a chamber for the smaller parts to be processed and a chamber for the larger and longer components. We also included a jog button on the control panel to help bring the parts to the top of the media to make it easier for operators to collect the parts.

#### Benefits of the vibratory finishing process

- In a 4 hour Vibratory Finishing process most of the SLS parts are smoothly finished.
- The process reduces the faceting caused by the printing process and could also be a method for reducing the orange peel.
- The mass finishing solution helps our customer to achieve an Ra value of approx. 3 Micron.
- This is visually a good result, parts being smooth to touch.
- The solution offered by ActOn is cost effective as client can use only one finishing machine to process 3D printed parts of different shapes and sizes.
- The ROI for this project was 34 week



# Consumables for Surface Finishing 3D Printed Components

Over the years, we have been at the forefront of the industry, developing a range of consumables with the aim of achieving the desired finish on various components.

By working closely with highly skilled manufacturers, our Engineers understand the numerous challenges faced in the 3D printing industry, which has led to the development of suitable consumables.

Our most popular consumables for the additive manufacturing industry:

## Ceramic Media

Our ceramic media comes in a variety of abrasive grades, starting from low abrasive to super finishing. This type of media is suitable for various deburring, radiusing and polishing processes, and is specially formulated to go hand-in-hand with ActOn's compounds.



Media Grade	Grinding Performance	Media Shape													
		ACT AngleCut Triangle	SCT StraightCut Triangle	ACC AngleCut Cylinder	SOC StraightCut Cylinder	W Wedge	S Star	TR Tristar	ACTR AngleCut Tristar	E Ellipse	ACE AngleCut Ellipse	AR Arrow	R Rhombus	B Ball	
P	Polishing media	○	○	○	○	○		○	○	○	○	○		○	
CFB	Medium abrasive	○	○	○	○					○					
SFB	Highly abrasive	○	○	○	○	○	○	○	○	○	○	○	○		

## Plastic Media

Our range of plastic media comes in various grades, shapes and sizes and is specially designed for smoothing processes and removing light burrs. This media also reduces the risk of part damage, and gives a consistent, bright and matte finish. We offer plastic media in the following shapes and grades:



Media Grade	Grinding Performance	Media Shape									
		Cones	Paracones	Pyramid	Tetra	Tristar	Wedge	Octocone	Button	ACT AngleCut Triangle	
YL	▲	○	○	○	○	○	○	○	○	○	
BL		○	○	○	○	○	○	○	○	○	
BR		○	○	○	○	○	○	○	○	○	
PTX		○	○	○	○	○	○	○	○	○	

## Shot Blasting & Peening Media



ActOn offers a range of Abrasive Consumables for shot blasting and peening processes including: **Aluminium Oxide (White and Brown), Glass Beads and Zirblast media.**

Using ActOn abrasive consumables you can achieve the desired Sa standards to ensure that the part's surface is cleaned to the required specification

## Dry Polishing Media

ActOn Dry Polishing Media is manufactured from corn cob (Maizorb) and Walnut Shell and can be used for a variety of finishing applications including drying, polishing and cleaning.

We developed our dry polishing maizorb to produce a bright mirror finish. This can be used both in vibratory and high energy machines. The pre-treated walnut shell is perfect for producing a high luster on components requiring a high-quality aesthetic finish.

All of our dry polishing and pre-treated medias are bovine free.



## Finishing Compounds

ActOn liquid compounds are specially formulated for vibratory and high energy finishing machines. They comprise of abrasives, brighteners, lubricating agents, cushioning materials & cleaning agents. Our compounds are environmentally friendly and biodegradable that suit our customers' requirements.

Compound Name	Description	PH	Application guide
LQ9	Specially formulated for polishing and brightening of ferrous & non-ferrous metals.	<4	<b>Excellent for:</b> brightening & polishing, pickling, foaming <b>Good for:</b> ball burnishing
LQ15D	Specially formulated for die-cast products. Excellent cleaning & emulsifying properties.	8 - 8.5	<b>Excellent for:</b> cleaning <b>Good for:</b> brightening & polishing, ball burnishing, degreasing, de-oiling <b>Average for:</b> foaming
LQ16	Concentrated cleaner and polisher for non-ferrous metals.	8.5 - 9	<b>Excellent for:</b> brightening & polishing, ball burnishing <b>Good for:</b> cleaning <b>Average for:</b> foaming
LQ18	Light descaling, removal of rust & discoloration due to heat treatment processes. Removes metal oxides to produce a bright polish, retaining base metal colour.	1 - 2	<b>Excellent for:</b> brightening & polishing <b>Good for:</b> ball burnishing, pickling <b>Average for:</b> foaming
LQ19	Multi-purpose compound for all metals.	8 - 8.5	<b>Good for:</b> ball burnishing, cleaning, corrosion inhibition <b>Average for:</b> brightening & polishing, foaming

Click [here](#) to download our Consumables brochure for further technical information and media dimensions.

## » SUBCONTRACT SERVICES

On top of our state-of-the-art machinery and media, we also supply a range of support and training services. Moreover, we'll tailor our services and products to your needs, not the other way around. Our finishing service is all about you.

We suit our Finishing Technology and Subcontract Services to cover your needs. From a proved surface finishing technology we will adapt it according to your requirement. Just [contact us](#). We will do the rest.

### Custom project development:



Don't just think about it.  
It's now time to **ActOn** it.



CHEF, CLM, CDF, Shot Blasting & Vibratory Finishing Subcontract



Inspection Services



Installation, Training, Maintenance Services



Equipment Refurbishment & Spare Parts Service

## » | WHAT OUR CUSTOMER SAY?

“I have used Acton Finishing many times over the years and have always found them very helpful and knowledgeable about vibro finishing. The team will always come over and help and diagnose issues we have with our machines also. Highly recommended.”

Luke Parker, Bracebridge Engineering Ltd.

“Recently purchased a VB20S for use in our manufacturing for motorsport division. Good value, great machine and attitude. professional sales, engineering and support pre and post installation, very much recommend.”

Eddie Beeston, Lohen UK

“We worked together to devise a series of tests and these were conducted by ActOn Finishing using a range of technologies employing different media types and a range of run times, to establish the optimised equipment and process to support our application. This was done quickly and professionally with regular updates along the way.

ActOn Finishing’s openness and willingness to conduct trials to establish the most suitable technology and process, was exactly what Ricoh required from a technical partner. As engineers, we like to capture lots of data to prove processes and learn through experimentation. During this collaborative project, we were able to share knowledge with ActOn Finishing to quickly establish a smoothing process for SLS printed parts. This open style learning approach is really important to Ricoh, because the knowledge developed provides value on both sides, which in turn increases the chances of future collaborative projects.”

Richard Minifie, Ricoh UK Product Limited





## » | QUALITY YOU CAN SEE

We pride ourselves on our excellence, and over the years we have successfully demonstrated an ongoing compliance with ISO quality and environmental standards. We're also an approved supplier for many of our industries, including medical and aerospace.

For ISO, we currently hold:



**“ The bitterness of poor quality remains long after the sweetness of low price is forgotten. ”**

Benjamin Franklin

Dealer Benelux:



Normfinish - Surface Treatment

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