

Flexibility, Precision & Control In a Wide Range of Applications

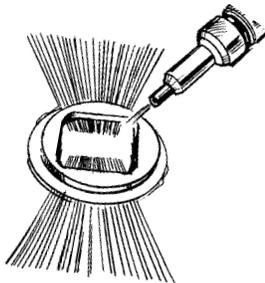
Micro-abrasive blasting is ideally suited to a wide variety of applications. We find that these applications can be grouped into the five following processes:

- **selective cleaning**
- **focused cutting**
- **precision deburring**
- **surface preparation**
- **material removal**

The micro-abrasive blasting process ensures pinpoint adjustment of specific characteristics of the abrasive stream on a multitude of surfaces – making it powerful enough to cut hardened metals yet soft enough to selectively remove coatings from other surfaces.

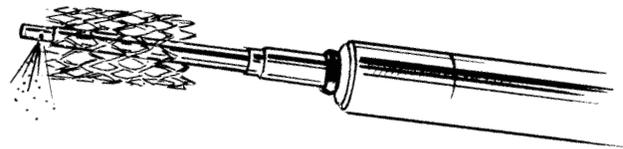
The flexibility, precision, and control inherent in micro-abrasive blasting guarantees consistent results that meet the critical demands of today's production environments.

This bulletin includes only a few examples of the broad range of applications grouped under the five processes. At Comco, we are committed to finding the solution to your manufacturing problems. Please contact our Technical Support team for specific information on applications in your industry.



SELECTIVE CLEANING:

Probe cards used for testing semiconductor devices consist of a circular printed circuit board with a center opening in which very delicate tungsten needles are arrayed for the purpose of probing test points on these devices. The needles are arranged in a circular fashion and held in place by an epoxy compound. The spacing between needles is extremely small, sometimes as little as 50 microns wide. Excess epoxy compound is removed from the area between the needles by micro-abrasive blasting with a micron graded sodium bicarbonate media. Precision control of the micro-abrasive blast permits removal of the epoxy flash without damage to the needle.



Medical implants including stents and shunts are typically fabricated by a laser machining process. This process produces discoloration and oxidation of the base material and creates laser slag deposits which must be removed. The controllability and "shockless" nature of micro-abrasive blasting have proven to be an effective method of cleaning these devices without deforming or damaging the intricate matrix shape of the products.

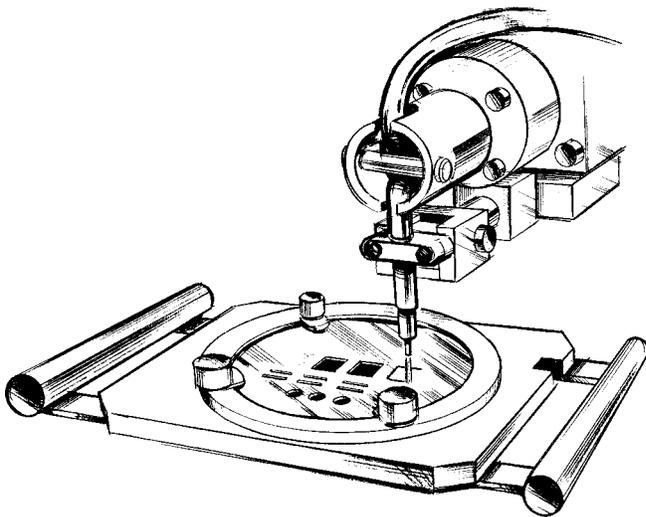
Another area where micro-abrasive blasting has proven to be effective is in the cleaning of **extrusion dies and mold tooling**. By precision selective blasting in mold cavities and die openings, residual materials are quickly and easily removed.

FOCUSED CUTTING:

Cutting slots or apertures in **silicon wafers** is easily accomplished with the micro-abrasive process. The process can effectively cut this thin, fragile material without introducing micro-fracturing of the substrate at the point of the cut. By interfacing the abrasive nozzle with programmable motion components, close tolerance and highly accurate cutting can be performed.

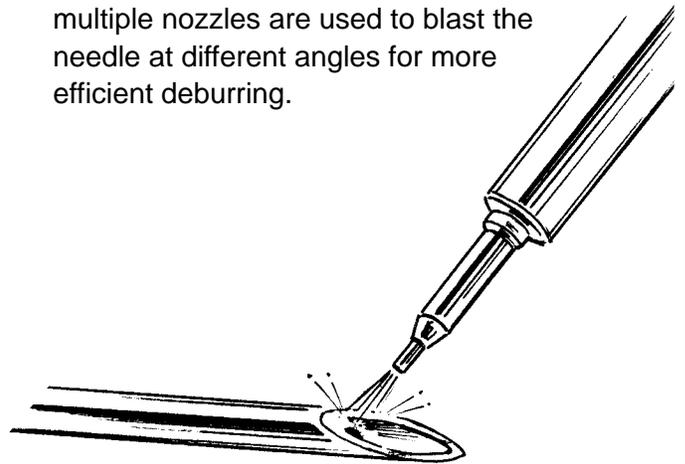
Glass is another material that is difficult to cut or drill, particularly if the glass has minimal thickness. Micro-abrasive blasting is used to produce a clean cut or hole without cracking or breaking the substrate. Engraving nomenclature or codes in **optical lens elements** is easily accomplished with this process. Decorative glass engraving where fine detail is required is a popular application for micro-abrading equipment.

When prototyping **printed circuit boards**, engineering changes often must be made prior to the release of the final design. This usually requires cutting of the solder trace paths. The exceptional control provided by micro-abrasive blasting permits cutting of circuit traces without damaging the underlying layer of the circuit board.



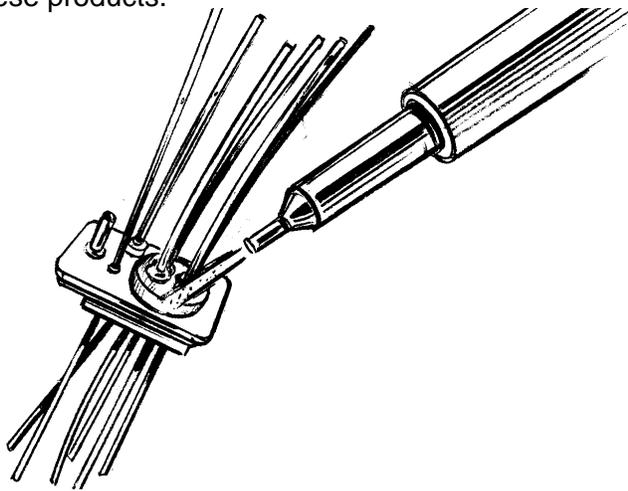
PRECISION DEBURRING:

A popular use of micro-abrasive equipment is to deburr **hypodermic needles**. Small diameter, thin wall stainless steel tubing is ground at an angle to produce the point of the needle. This process generates a "heel" burr at the ground end which must be removed. Micro-abrasive blasting is very effective at removing this burr and imparting the desired surface finish as well. Often multiple nozzles are used to blast the needle at different angles for more efficient deburring.



Precision machined valve bodies, particularly in the aerospace industry, are required to be burr free. These products frequently have a number of slots and intersecting holes, which are impossible to deburr by conventional tumble deburring methods. The MicroBlaster is ideal for removing these difficult to reach burrs. Using miniature abrasive nozzles, with openings from .010" to .060", it is possible to place them within small holes or slots in the part to quickly remove the burr while maintaining dimensional tolerances.

Molded chip carriers and connector bodies in the electronics industry may require deburring, or deflashing, of multiple small holes present in products of this type. These holes are typically very small with a minimal amount of material to be removed. Broadcast blasting with a .046" or .060" micro-abrasive nozzle using plastic blast media or walnut shells is very effective for deburring these products.

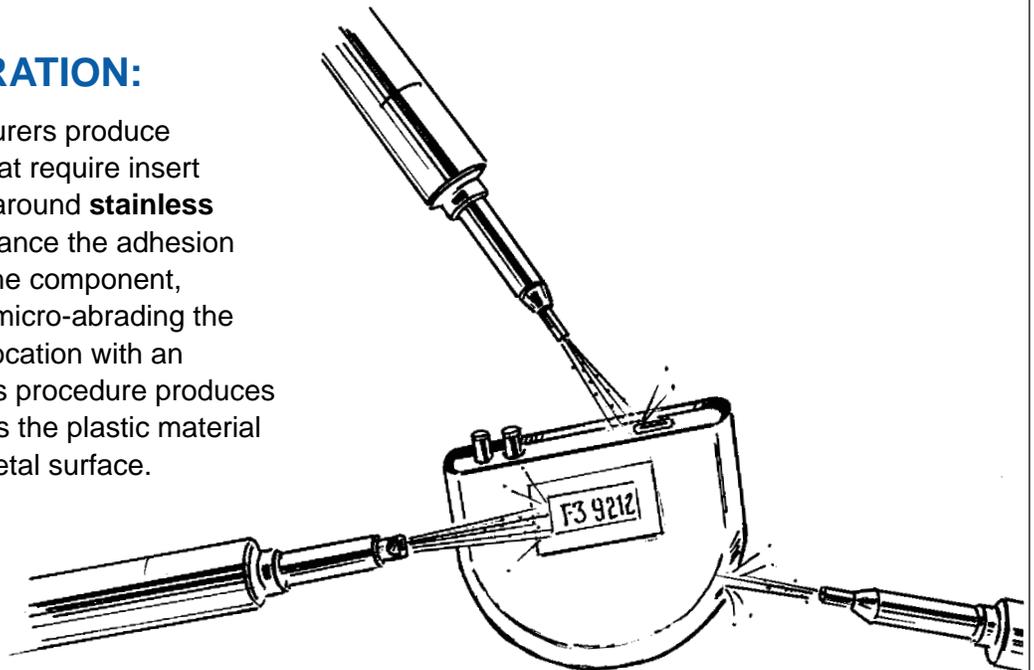


SURFACE PREPARATION:

Medical device manufacturers produce a wide range of products that require insert molding of plastic material around **stainless steel components**. To enhance the adhesion of the molding material to the component, the surface is prepared by micro-abrading the component at the desired location with an aluminum oxide media. This procedure produces a light texturing that enables the plastic material to bond effectively to the metal surface.

Electronic load cell and strain gauge manufacturers use the micro-abrasive process to prepare the surfaces of **sensor circuit materials and substrates** prior to bonding. The fragile nature of the thin sensor material demands an extremely light abrading action to etch the surface of the material without introducing collateral damage. The MicroBlaster, with its high degree of controllability, combined with finely graded media, performs this task with ease.

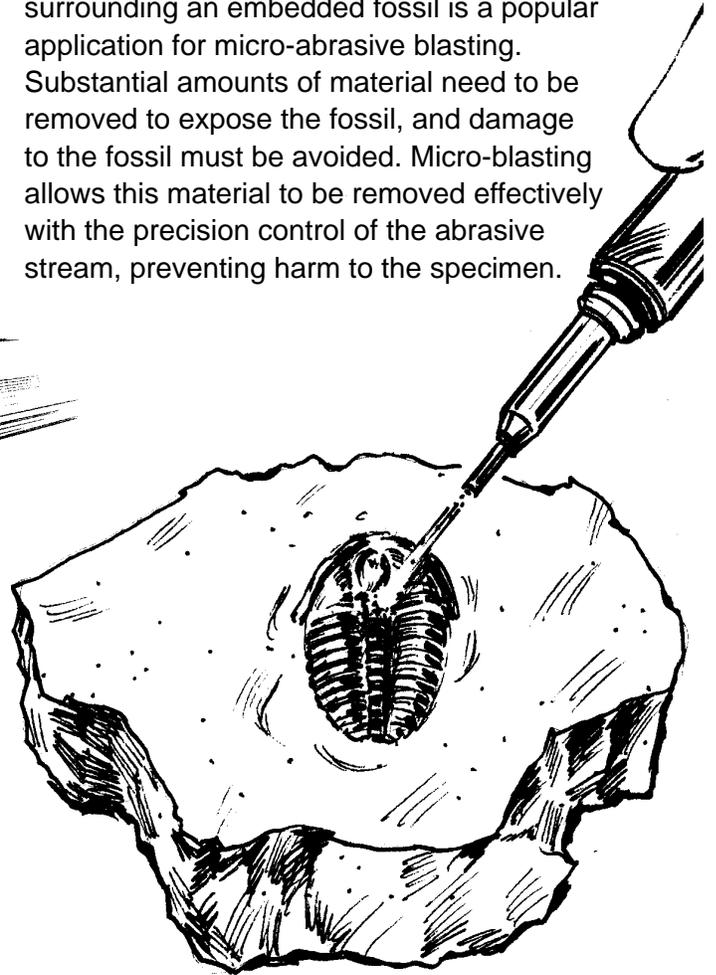
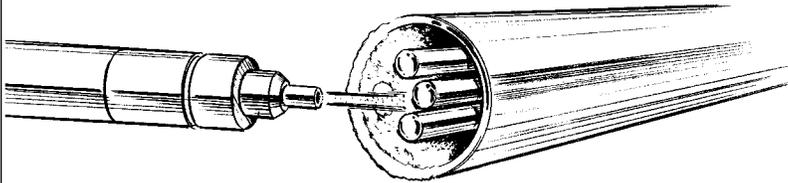
Frequently the surface of a product needs to be altered to produce a matte or satin finish for appearance reasons. A number of industries, primarily the jewelry and medical device manufacturers, require this application. Micro-abrasive blasting, with an appropriate abrasive media and blasting pressure, can produce surface finishes from semi-polished to full matte, even on **plated surfaces**.



MATERIAL REMOVAL:

A common use of the micro-abrasive process is to remove manganese oxide filler material from **thermocouple tubes**. This material must be removed in small selected areas, usually at one end of the tube, without damaging the inner conductors of the device. Using a small nozzle tip and the proper abrasive, this filler material is quickly removed without harming the conductive leads.

Fossil preparation to remove the matrix surrounding an embedded fossil is a popular application for micro-abrasive blasting. Substantial amounts of material need to be removed to expose the fossil, and damage to the fossil must be avoided. Micro-blasting allows this material to be removed effectively with the precision control of the abrasive stream, preventing harm to the specimen.



Dental labs fabricating **porcelain crowns and bridges** frequently use the micro-abrasive process to devest casting material from these products. In the casting process, a thick, sacrificial ring of material, similar to plaster of Paris, is formed around the individual crowns. The MicroBlaster, with its focused abrasive stream, offers precise control and faster removal of this material than conventional grinding tools.

*Whatever your application,
Comco's Technical Support Team
can recommend the proper
MicroBlaster, Nozzles and Media
that will solve your specific needs
with power and precision.*