

# UW Physics Student Machine Shop

## Standard Operating Procedures

### Abrasive Blast Cabinet

#### Purpose

Abrasive Blasting, or “Sand Blasting,” is a means of resurfacing metal parts. Using an extremely high-pressure stream of air or water, mixed with abrasive media. This abrasive stream can be highly effective in rust, paint, and burr removal. This stream can also be a highly effective means of preparing metal surfaces for anodize, black oxide, or painting as well as achieving a finer surface finish.

#### Limitations

- It may not be obvious to the inexperienced, but abrasive resurfacing can be dangerous and time-consuming. Allow sufficient time to do both safe and quality work.
- The blast media can be very dangerous: The highly pressurized stream exiting the nozzle can remove flesh and bone much faster than metal.
- Airborne blast media can also be dangerous. It can escape the cabinet through all the small cracks and holes in the cabinet, especially at the edges of doors and glove holes.
- The choice of blast media is an important one. Media may be single-use consumable or recyclable, fully organic like walnut shells or corncob, plastic, crushed glass or glass beads, as well as manufactured media like aluminum oxide, or even natural actual sand or manufactured silica, but these release very dangerous fine dust.

- Dust masks or respirators should always be worn with any media.
- Results will be limited to pressure and flow of the contained system as well as the properties of the chosen media. In general, angular particles, like crushed glass or aluminum oxide run more aggressive as opposed to glass beads which are much less aggressive.
- All Blast Cabinets are limited in size. The size range standard to most shops allows for a clear top door that flips up and sometimes latching side panels. The workpiece must fit completely in the enclosed cabinet, allowing all door panels to seal shut.

**As always, whenever you have any questions regarding the safe operation of Student Shop equipment, find the Shop Instructor or another Instrument Maker and ask before you act.**

## **Hazards**

There are a number of particular hazards associated with the operation and use of tool, including but not limited to:

- Eye Hazard: Always wear safety glasses and/or an OSHA-tested face shield.
- Finger/Hand Hazards: Avoid direct blasting of gloves. If needed, bend a piece of wire to hold small parts safely or build a wood support for larger parts.
- Ergonomics: The Abrasive Blast Cabinet should be elevated to the proper level to allow the operator to comfortably reach and use the safety gloves, blasting gun, and foot pedal while viewing through the top view door.
- Always wear safety clothing, including eye protection and protective footwear, while operating or servicing the machine.
- Breathing Hazards: Inspect enclosure of Blast Cabinet for leaks, ALWAYS WEAR DUST MASK OR RESPIRATOR WHILE BLASTING.
- Keep the work area around the brake clear and clean to avoid slipping or tripping.
- Do not operate the machine if it has been damaged or is not operating properly.
- Do not wear jewelry (watches, rings, necklaces, etc.), or loose fitting clothing while operating or servicing the machine.
- All guards and covers must be in place before operating the machine.

## **Required Personal Protective Equipment (PPE)**

- Safety glasses and/or an OSHA-tested face shield.
- Closed-toe, sturdy footwear. Sturdy sneakers and other such footwear is the minimum level of allowable foot protection. Proper safety shoes or boots, with

steel toes, electrical protections, etc. are preferred. Extremely lightweight sneakers and all sandals and flip-flops are not safe for machine shops in general.

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- Hearing protection is recommended in areas which exceed 85 decibels.
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- Higher decibel levels can cause permanent hearing loss very quickly so hearing protection is always recommended in machine shop.
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- If sufficient dust is created, a particle mask or respirator is advised.
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- Hair ties, hats, etc. to safely contain long hair if needed
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- Sturdy, well-covering and comfortable clothing WITH NO LOOSE SLEEVES, SCARVES, etc.