

ABRASIVE BLASTING

Abrasive blasting is a common industrial process used to remove surface irregularities on a variety of materials including metals, castings, plastics or composites. The process features a high velocity stream of materials such as sand, steel shot, plastic beads, walnut hulls or grit at a target working material. This operation is done to prepare parts for final finishing (e.g. painting, machining, assembly) or to remove paint, scale or other finish coatings for rework or reclamation.

Some of the key benefits from abrasive blasting filtration include:

- Worker health protection and minimized potential long term liability
- Energy savings and conservation through recirculated conditioned air, where feasible
- Extended machine life
- Improved part / product quality
- Reduced housekeeping
- OSHA & EPA regulation compliance

Contaminant Characteristics

The high pressure spray and resultant impact velocities cause the blast media to break apart on impact. The removed scale metal or finish coating can become airborne in as small as 0.5 – 5.0 micron particles. A portion of the blast media remains airborne while heavier particles tend to fall to the floor, and in many cases the heavier particles can be automatically picked-up and reused. The irregular size, shape, and coarse nature of the pollutant particles make them highly abrasive. When abrasive blasting hazardous materials are used, the possible toxicity of the material removed must be considered. Abrasive blasting is most commonly performed within enclosed blasting machines or within isolated blast rooms. Local exhaust ventilation along with personal protective equipment such as eye protection and respirators should be also used by workers during the blasting process.

Abrasive Blasting Health Hazards

Abrasive blasting generates large amounts of dust that includes the blasting materials, the base material or the working piece, and any surface coatings such as paint that may be present. The broad nature of materials and parts commonly used in abrasive blasting leads to a wide variety of contaminants that can be hazardous when inhaled by workers. Additional hazards such as collecting the combustible or explosive material that results from the blasting process must also be considered.

Recommended Approaches for Abrasive Blasting Contaminant Control

The recommended approach for controlling abrasive blasting dusts depends on the blasting method and process being used. For blasting machines where the process is contained, keeping the enclosure volume under a negative pressure with sufficient capture velocities on all open areas can be an effective method to control the contaminants. The actual airflow required is based on the type of contaminant and the geometry of the blasting enclosure. It is important to draw only enough air to capture just the airborne dust and not the blast material.

When abrasive blasting is performed without an enclosure, the following methods are possible solutions for controlling the generated contaminant. Note that even when these control methods are utilized personal protection devices for workers proximate to the process should also be used.

- **Crossdraft.** Used in blast rooms or on enclosures where one side of the booth is configured as a hood that extracts the contaminants horizontally across the booth. The extracted air can either be ducted to a dust collector located remotely or drawn directly into a collector that incorporates a hood. In some cases, the filtered air can be returned to create a push-pull airflow pattern to improve the contaminant control.
- **Downdraft.** Similar to crossdraft type solution except the air is drawn through openings below the process in the floor. The extracted air is generally ducted to a dust collector located remotely. The filtered air can also be returned to create a push-pull airflow pattern to improve the contaminant control.

- **Local Containment.** Containment isolates the abrasive blasting process from the rest of facility and protects the contained area. An example would be a partitioned area kept under a slight negative pressure similar to what can be used on abrasive blasting machines.

Dust collection solutions for abrasive blasting may also require special options or accessories to improve the safety and reliability of the system. For example, special inlets can be used to slow the contaminant prior to being filtered in order to reduce filter abrasion. When collecting combustible dusts, fire retardant cartridge filters are recommended and if the dust is explosive, explosion vents or other safety precautions may be required.

Product Solutions for Collecting Abrasive Blasting Contaminants

You will find we offer multiple types of dust collection equipment that can be utilized to safely control abrasive blasting dusts. UAS brand products that are most commonly applied in abrasive blasting applications are listed below. Our application engineers can help you select the right product with the appropriate options and accessories such as abrasive inlets to meet your specific performance, application and facility needs.

DustHog products that are most suitable for abrasive blasting applications include:

- [SFC Series Downward Flow Cartridge Dust Collectors](#)
- [C Series Cyclone Dust Collectors](#)
- [MCB Series Cross-Ventilation Dust Collectors](#)