## Abrasive Blasting

1. **Purpose**

The purpose of this program is to provide minimum guidelines for the safe operation of abrasive blasting.

1. **Scope**

Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations shall not exceed the limits specified in the Threshold Limit Values of Airborne Contaminants for Construction (40 CFR 1926.55(a)). Employees' exposures can include inhalation, ingestion, skin absorption, or any contact with any substance or material at a level of concentration greater than the TLV.

1. **Procedure**

Abrasives and surface coatings on the materials blasted are shattered and pulverized during blasting operations and the dust formed will contain particles of respirable size. The composition and toxicity of the dust from these sources shall be considered in making an evaluation of the potential health hazards.

Before painting or blasting begins, a safety meeting shall be conducted to inform personnel of the dangers associated with the products being used and to advise all personnel of the precautions necessary to protect themselves.

Blasting media and dust shall not be allowed to accumulate outside the blasting booths or on the floor of the blasting booths. Blasting operations will be halted so that the material can be cleaned up.

1. **Air Compressors**

* All portable air compressor units should be equipped with a remote operated air intake manual shutdown device, spark arrestors and machine guards. Units with noise dampening packages to reduce exposure level are preferred.
* Air compressors must be located in a well-ventilated area. It must be able to contain large volumes of clean, toxicant-free air. This means the compressor must be placed up wind from the blasting operation and out of the range of dust and flying abrasives.
* Pressure safety valves on air compressor volume bottles shall be set below the rated pressure on air hoses or lines.
* Pressure safety valves shall be installed and tested to protect the component with the lowest maximum allowable working pressure of the blast system.
* Due to the high pressure that air compressors create, precautions must be taken to prevent unleashing of strong forces that can cause serious bodily injury.
* Never adjust the pressure setting on a compressor above the blast equipment maximum working pressure rating. The maximum working pressure rating is indicated on the manufacturer’s metal identification plate.
* Compressed air shall not be used for cleaning purposes except where the pressure is reduced to less than 30 p.s.i.

1. **Hoses and Connectors**

* All pressurized hose connections shall be secured with a safety pin to prevent uncoupling and subsequent whipping action.
* Whip checks must be installed at bull hose connections.
* Operator should hold onto the blast hose until the air pressure from the nozzle drops off to zero.
* Do not use hoses with soft spots.
* Never use tape to repair a blown-out hose.
* Immediately replace a hose if a blowout or leak occurs.
* Hose ends must come into contact with coupling gaskets to prevent leaks and to maintain static electricity conductivity.

1. **Nozzle and Remote Control**

* A spring loaded, automatic nozzle shut-off is required as a failsafe device on each blast hose.
* Blast nozzles shall be bonded and grounded to prevent the buildup of static charges. Where flammable or explosive dust mixtures may be present, the abrasive blasting enclosure, the ducts, and the dust collector shall be constructed with loose panels or explosion venting areas, located on sides away from any occupied area, to provide pressure relief in case of explosion following the principles set forth in the National Fire Protection Association Explosion Venting Guide. NFPA 68-1954.
* Organic abrasives which are combustible shall be used only in automatic systems.
* Blast cleaning nozzles shall be equipped with an operating valve which must be held open manually. A support shall be provided on which the nozzle may be mounted when it is not in use.
* All blast machines must be equipped with remote control systems to start and stop the blasting process.
* Never tape, strap, or tie down an air actuated remote control lever or choke electric remote control switch.
* If there is the slightest delay in reaction time of the handle lever or lever lock to open, check for dust and dirt build-up around pivot pins before resuming blasting. Also, test the tension on the lever springs, and replace them immediately if they do not respond rapidly.
* Substituting component pieces with other manufacturer’s parts is not allowed.
* Inspect blast nozzles for wear and cracks on the inner liner. When a nozzle orifice is worn 1/16” larger than its original size, it should be replaced.
* Check nozzles and nozzle holders for deterioration of thread form. Threads on nozzles and their companion holders must not be cross-threaded, worn or distorted.
* Hoses that are being tied and lifted to blasting operations being conducted above grade, i.e., scaffolds, shall be depressurized to prevent accidental start-up.

1. **Hopper**

* Abrasive material hoppers capable of being filled with bulk supplies shall be equipped with a receiving platform and keeper rails on the top to protect the worker filling the hopper.
* Synthetic slings on bulk abrasive bags shall be inspected prior to each lift.
* For communication purposes place blast pot between the compressor and the surface to be blasted. This will enable the pot tender and operator to make visual contact.
* All couplings and pipefitting on the blast pot, compressor and hoses must be airtight.

1. **PPE**

When blasting operations are present, all workers in the blasting area will wear respirators to guard against hazardous and/or toxic dust.

Personal protective equipment for sandblasting personnel shall include but not be limited to:

* Heavy canvas or leather gloves
* Safety toe protective footwear
* Air supplied type CE blasting respirator with protective hard cap
* An outer garment of disposable Tyvek or similar material that will be disposed of at the end of each work shift.
* Blasting helmet with supplied air. The air shall be free of harmful quantities of oil, mists, or noxious gasses and must meet the requirements for supplied-air quality and use specified in 29 CFR 1910.134 (i).

Protective eyewear meeting the requirements of ANSI Z87.1 shall be worn by all personnel in the immediate area during blasting operations.

Hearing protection devices shall be worn in all known or suspected areas where noise levels exceed 85dBA.

Operators in outside blasting operations shall wear disposable coveralls of appropriate weight to prevent dust from impregnating clothing. Operators blasting in the enclosed blasting booths shall wear heavy abrasive resistant clothing.

1. **Respirator Use**

A specific work-site procedure shall be developed where respirators or CE blasting hoods/helmets are required to protect the health of the operator. The procedure shall comply with 29 CFR 1910.134.

* Abrasive blasting respirators shall be worn by all abrasive blasting operators under conditions that require abrasive blasting respirators.
* Half face piece/full face piece, air purifying respirators with high efficiency particulate air filters shall be worn by all personnel inside the barricaded blasting area.
* A type CE pressure-demand abrasive blast respirator shall be worn by the blaster whenever silica sand is used as an abrasive material.
* Type CE, continuous-flow air supplied respirators can be used only if silica sand is not used as the blasting agent.
* Air for abrasive-blasting respirators must be free of harmful quantities of dusts, mists, or noxious gases.
* All respirators shall be cleaned and disinfected at the end of each work day.
* The breathing air system shall be of a separate source than the abrasive blast air system unless it is filtered to Grade D standard. Periodic monitoring of air quality should be performed.
* The source for breathing air must be kept in a clean environment and contain adequate filtration to prevent its contamination.
* The hose line connection fittings shall not be interchangeable between the breathing air and the abrasive blast supply.