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Gallant Builders (Gallant) has implemented this program for the safety of the workers involved in abrasive blasting.

I. Purpose

The purpose of this program is to define the procedures and standards for the workers involved in abrasive blasting activities on Gallant projects.

II. Scope

This procedure applies in its entirety to all Gallant projects unless a variance is granted by the Gallant Safety Director.

III. Application

This standard applies to all operations where an abrasive is forcibly applied to a surface by pneumatic or hydraulic pressure or by centrifugal force.

IV. Selection of Abrasives and Equipment

Each type of abrasive and each type of equipment has its particular advantages in producing the quality of work desired, and the selection will depend on the specific requirements of the user. Therefore, no rule or suggestion can be given in this standard for the selection of a particular abrasive or of particular equipment. With properly designed equipment and proper operation and maintenance all types of abrasives and equipment can be used safely. However, abrasives which create the minimum hazard should be used wherever feasible.

Air for abrasive-blasting respirators must be free of harmful quantities of dusts, mists, or noxious gases, and must meet the requirements for supplied-air quality and use specified in 29 CFR 1910.134(i).

The 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.

Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.

V. Abrasive Blasting Operations

Abrasive - A solid substance used in an abrasive blasting operation.

Abrasive Blasting - The forcible application of an abrasive to a surface by pneumatic pressure, hydraulic pressure, or centrifugal force.

Abrasive-Blasting Respirator - A continuous flow airline respirator constructed so that it will cover the wearer's head, neck, and shoulders to protect him from rebounding abrasive.

Air-Line Respirator - A device consisting of a face-piece, helmet, or hood to which clean air is supplied to the wearer through a small-diameter hose from a source not on the wearer's body.

Blast Cleaning Barrel - A complete enclosure which rotates on an axis, or which has an internal moving tread to tumble the parts, in order to expose various surfaces of the parts to the action of an automatic blast spray.

Blast Cleaning Room - A complete enclosure in which blasting operations are performed and where the operator works inside of the room to operate the blasting nozzle and direct the flow of the abrasive material.

Blasting Cabinet - An enclosure where the operator stands outside and operates the blasting nozzle through an opening or openings in the enclosure.

Clean Air - Air of such purity that it will not cause harm or discomfort to an individual if it is inhaled for extended periods of time.

Dust Collector - A device or combination of devices for separating dust from the air handled by an exhaust ventilation system.

Exhaust Ventilation System - A system for removing contaminated air from a space, comprising two or more of the elements; enclosure or hood, duct work, dust collecting equipment, exhauster, and discharge stack.

VI. Dust Hazards from Abrasive Blasting

Dust sources. Abrasives and the 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. 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 threshold limit values limits specified in 1926.55(a). When ventilation is used as an engineering control method, the system shall be installed and operated according to the requirements of this section

Dust shall not be permitted to accumulate on the floor or on ledges outside of an abrasive-blasting enclosure, and dust spills shall be cleaned up promptly. Aisles and walkways shall be kept clear of steel shot or similar abrasive which may create a slipping hazard.

VII. Types of Abrasives

A large variety of solid materials may be used as abrasives, with qualities varying from hard deep-cutting to soft polishing. These include; mineral grains, either synthetic or natural, metallic shot or grit, generally of steel or chilled cast iron, and organic abrasives, such as ground corncobs or walnut shells.

Silica sand is the most hazardous mineral abrasive commonly used and its use should be limited wherever possible.

The potential hazard from steel or iron dust is considered to be minimal.

Readily combustible organic abrasives may be pulverized fine enough to be capable of forming explosive mixtures with air.

VIII. Types of Coatings

A surface coating formed during the fabrication of a part, or a protective coating applied after fabrication, will be removed and dispersed as a dust by abrasive blasting. The type of coating should be known to make a proper evaluation of the potential hazard.
Silica sand is frequently embedded in the surface of castings and may be pulverized by blast cleaning.

Coatings containing toxic metals will add to the potential seriousness of the dust exposures. Examples of such coatings are anti-fouling paints containing mercury, lead paints on structural steel, cadmium plating, and lead deposits on pistons of internal combustion engines.

Plastic or resin coatings may be decomposed by the action of the abrasives to form irritating by-products.

IX. Wet Abrasive Blasting

Wet methods will tend to keep dust exposures minimal, but droplets dispersed and dried residues which become airborne may create potential exposures.

X. Concentrations of Contaminants

The concentration of respirable dust or fumes in the breathing zone of the abrasive-blasting operator or any other worker shall be kept below the recommended levels

XI. Use of Combustible Abrasives

Organic abrasives which are combustible shall be used only in automatic systems because the fine dust produced presents a potential fire and explosion hazard

Where flammable or explosive dust mixtures may be present, the construction of the equipment, including the exhaust system and all electric wiring shall conform to the requirements of American National Standard Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying, Z 33.1- 1961 (NFPA 91-1961; NBFU 91-1961), and chapter 296-24 Part L. The blast nozzle 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 for pressure relief in case of explosion, following the principles set forth in the National Fire Protection Association Explosion

Venting Guide, NFPA 68-1954.

A respiratory protection program as defined and described in 1926.103, shall be established wherever it is necessary to use respiratory protective equipment, including worksite-specific procedures and elements for required respirator use. Abrasive blasting respirators shall be worn by all abrasive blasting operators under certain conditions.

Equipment for protection of the eyes, face and body shall be supplied to the operator when the respirator design does not provide such protection and to any other personnel working in the vicinity of abrasive blasting operations. This equipment shall conform to the requirements of 1926.102.