Chapter 296-818 WAC
ABRASIVE BLASTING

WAC 296-818-100 Scope. This chapter applies to all abrasive blasting operations where an abrasive is forcibly applied to a surface using any of the following:
• Pneumatic pressure
• Hydraulic pressure
• Centrifugal force

References: Depending on your work processes, here are examples of other chapters you may need:
Safety and health core rules, chapter 296-800 WAC
Machine safety, chapter 296-806 WAC
Respiratory hazards, chapter 296-841 WAC
Respirators, chapter 296-842 WAC
Lead, chapter 296-857 WAC
Scaffolds, chapter 296-874 WAC
Cadmium, chapter 296-62 WAC
Part L, Electrical, chapter 296-24 WAC

WAC 296-818-200 General safety—Summary contents.

Your responsibility:
To protect employees from hazards associated with their work environment

Dust hazards
WAC 296-818-20005
Personal protective equipment (PPE)
WAC 296-818-20010
Housekeeping
WAC 296-818-20015

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 06-12-074, § 296-818-100, filed 6/6/06, effective 9/1/06.]

WAC 296-818-20005 Dust hazards.

IMPORTANT:
• Abrasives and the surface coatings on materials blasted are shattered and pulverized during blasting operations. The dust formed will contain particles that could result in the following hazards:
  – Respiratory
  – Fire
  – Explosion
  • Wet blasting methods minimize dust exposure, but dispersed droplets, mists, and dried residues may become airborne and create potential exposures.

You must:
• Evaluate the potential health hazards from abrasive blasting operations by considering the composition and toxicity of the abrasive material and the surface being abraded.

References: For additional hazard assessment requirements, go to these separate chapters:
– Respirators, chapter 296-842 WAC
– The Safety and health core rules, chapter 296-800 WAC
– Personal protective equipment, WAC 296-800-16005.
• For requirements on the use of Combustible organic abrasive, go to WAC 296-818-30005.

You must:
• Keep dust concentrations below the permissible exposure limits found in a separate chapter, Respiratory hazards, chapter 296-841 WAC.

Note: When sampling for dust concentrations, place the sample collection device:
  – In the breathing zone of the operator;
  AND
  – Outside the respiratory protection worn.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 06-12-074, § 296-818-20005, filed 6/6/06, effective 9/1/06.]

WAC 296-818-20010 Personal protective equipment (PPE).

You must:
• Provide, at no cost to the employee, and make sure personal protective equipment is worn.
  • Follow the requirements in Table-1, Personal Protective Equipment (PPE).

Table-1: Personal Protective Equipment (PPE)

<table>
<thead>
<tr>
<th>PROVIDE</th>
<th>WHEN</th>
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<tbody>
<tr>
<td>Abrasive Blasting Respirators</td>
<td>Operators work in any of the following situations:</td>
</tr>
<tr>
<td>– Inside blast cleaning rooms</td>
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<tr>
<td>– Where silica sand is used in manual blasting operations</td>
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<td>– Where concentrations of toxic dust exceed the permissible exposure limits found in a separate chapter:</td>
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<tr>
<td>■ Respiratory hazards, WAC 296-841-20020, Table-3 &quot;Exposure Limits for Air Contaminants&quot;</td>
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</table>
## Abrasive Blasting

**Exemption:**
- An abrasive respirator does not need to be worn if the operator is physically separated from the nozzle and blast by an exhaust ventilated enclosure.

**Definition:**
**Abrasive-blasting respirator**
A supplied air or a continuous flow respirator constructed to cover and protect the operator's head, neck and shoulders from rebounding abrasive.

### Eye and Face protection to both of the following:
- Blasting operators
- Personnel working near blasting operations

- Respirators worn during blasting operations do not provide eye and face protection

### Gloves and Aprons
- Operators are exposed to the impact of rebounding abrasives

**Notes:**
- Use only respirators certified by NIOSH in 42 C.F.R. Part 84 for protecting employees from dusts, and other hazards produced during abrasive blasting operations, like:
  - Using a garnet sand to blast a concrete surface, resulting in crystalline silica dust
  - A filtering face piece may be used only for short, intermittent, or occasional dust exposures for any of the following tasks:
    - To protect the operator during abrasive blasting operations performed outside the enclosure or outdoors where nonsilica abrasives are used on materials with low toxicity
    - Clean-up
    - Dumping dust collectors
    - Unloading shipments of sand at receiving areas when the following controls are not feasible:
      - Enclosures
      - Exhaust ventilation
      - Other means

**Reference:**
- For additional requirements to help you fully protect employees, go to the following separate chapters:
  - The Safety and health core rules, chapter 296-800 WAC:
    - Personal protective equipment (PPE), WAC 296-800-160
    - Respiratory hazards, chapter 296-841 WAC
    - Respirators, chapter 296-842 WAC:
    - Respirator program, WAC 296-842-120
  - Specifications for air quality, WAC 296-842-200

**WAC 296-818-20015 Housekeeping.**
**You must:**
- Keep aisles and walkways clear of steel shot or similar abrasives that may create a slipping hazard.
- Prohibit the accumulation of dust on the floors or ledges outside blasting enclosures.
- Clean up dust spills promptly.

**Note:**
- Removal of accumulated dust should be done:
  - With a high efficiency particulate air filter (HEPA), vacuum cleaner when the plant is not in operation; and
  - By a person wearing a respirator approved for the existing conditions.

### WAC 296-818-300 Operations—Summary contents.
**Your responsibility:**
To follow these operational requirements

**Combustible organic abrasives**
- WAC 296-818-30005
- Blast cleaning enclosures
- WAC 296-818-30010
- Blast cleaning nozzles

**WAC 296-818-30005 Combustible organic abrasive.**
**IMPORTANT:**
- This section applies to blasting operations where flammable or explosive dust mixtures may be present.

**You must:**
- Prohibit the use of combustible organic abrasives, except in automatic blast cleaning systems.
- Bond and ground the blast nozzle to prevent the buildup of static charges.

**Note:**
- Fine dust produced from combustible, organic abrasive is a fire and explosion hazard.

**WAC 296-818-30010 Blast cleaning enclosures.**
**You must:**
- Install adequate ventilation systems in blast cleaning enclosures that are able to do all of the following:
  - Control concentrations of airborne contaminants below the permissible exposure limits that apply
  - Provide a continuous inward flow of air at all openings in the enclosure during blasting operations
  - Minimize the escape of dust into adjacent work areas
  - Maintain visibility in blast cleaning rooms and cabinets
  - Rapidly clear dust from the air after blasting stops
  - Discharge exhaust so contaminated air does not do either of the following:
    - Present a health hazard to any worker; or
    - Reenter buildings in harmful amounts

### PROTECTIVE WHEN REQUIRED
<table>
<thead>
<tr>
<th>PROVIDE</th>
<th>WHEN</th>
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**Reference:**
- For additional requirements to help you fully protect employees, go to the following separate chapters:
  - Control concentrations of airborne contaminants below the permissible exposure limits that apply
  - Provide a continuous inward flow of air at all openings in the enclosure during blasting operations
  - Minimize the escape of dust into adjacent work areas
  - Maintain visibility in blast cleaning rooms and cabinets
  - Rapidly clear dust from the air after blasting stops
  - Discharge exhaust so contaminated air does not do either of the following:
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**Statutory Authority:** RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
WSR 06-12-074, § 296-818-30005, filed 6/6/06, effective 9/1/06.[Ch. 296-818 WAC p. 2]
• Make sure ventilation systems are designed and operated so employees are not exposed to excessive air velocities
• Make sure make-up air systems do not interfere with the effectiveness of the exhaust system, and are designed to do both of the following:
  – Replace exhausted air in ample quantities
  – Temper make-up (supply) air when necessary
• Do both of the following before opening the blast cleaning enclosure:
  – Turn the blast off
  – Run the exhaust system for a sufficient period of time to clear the air of dust particles
• Follow the requirements in Table-2, Blast Cleaning Enclosures.

**Table-2: Blast Cleaning Enclosures**

<table>
<thead>
<tr>
<th>If you have</th>
<th>Then make sure</th>
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<tbody>
<tr>
<td>Air inlets and access openings</td>
<td>They are either baffled or arranged so the combination of inward airflow and baffles minimizes both of the following:</td>
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<tr>
<td></td>
<td>– The escape of abrasive or dust particles into adjacent work areas.</td>
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<td></td>
<td>– Visible spurts of dust</td>
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<td>Small access openings where dust might escape</td>
<td>Slit resistant baffles are installed in multiple sets at all small access openings, and do both of the following:</td>
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<td>– Regularly inspect them</td>
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<td></td>
<td>– Replace them when needed</td>
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<tr>
<td>An observation window in enclosures where hard, deep cutting abrasives are used</td>
<td>The window is made of safety glass protected by screening</td>
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<td></td>
<td>Notes:</td>
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<td></td>
<td>• Hard, deep cutting abrasives may shatter normal glass.</td>
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<td></td>
<td>• If the safety glass shatters, the protective screening will help contain the glass and protect employees from cuts and lacerations.</td>
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<tr>
<td>Small operator access doors</td>
<td>They are flanged and tight when closed, and open from both inside and outside the enclosure.</td>
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<tr>
<td></td>
<td>Note:</td>
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<tr>
<td></td>
<td>If you have a small operator access door and a large work access door, the large work access door may open or close from the outside only.</td>
</tr>
</tbody>
</table>

**References:**

For more information on:
• Air velocities, refer to the following:
  – The latest edition of Recommended Industrial Ventilation Guidelines (ACGIH)
### Table-3: Explosion Venting and Wiring

<table>
<thead>
<tr>
<th>If you have</th>
<th>Then</th>
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<tbody>
<tr>
<td>Flammable or explosive dust mixtures that may be present</td>
<td>Make sure the construction of equipment, including the exhaust system and all electrical wiring, meets both of the following:</td>
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<td></td>
<td>• The electrical requirements for Class II locations in WAC 296-24-95613, located in Part L of chapter 296-24 WAC.</td>
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<tr>
<td>Make sure the construction of the exhaust system and all electrical wiring meets both of the following:</td>
<td>Make sure blast cleaning enclosures, the ducts, and the dust collector are constructed with either loose panels or explosion venting areas that meet all of the following:</td>
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<td></td>
<td>• Provides pressure relief in case of an explosion.</td>
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<td></td>
<td>• Are located away from occupied areas.</td>
</tr>
</tbody>
</table>

### WAC 296-818-500 Definitions.

**Abrasive:**
A solid granular substance used in abrasive blasting operations.

**Abrasive blasting:**
The forcible application of an abrasive to a surface using either:
- Pneumatic or hydraulic pressure;
**OR**
- Centrifugal force

**Abrasive-blasting respirator:**
A supplied air or a continuous flow respirator constructed with a shroud that covers and protects the head, neck, and shoulders.

**Automatic blast cleaning systems:**
A unit that has a blast cleaning chamber which usually has both of the following to provide a timed cleaning cycle:
- An automatic timer;
**AND**
- An automatic shutoff control

**Baffles:**
Partial enclosures in and around the emission sources which improve or enhance airflow at the hood.

**Blast cleaning barrel:**
A complete enclosure that rotates on an axis or an internal tread to tumble parts in order to expose various surfaces of the parts to an automatic blast spray.

**Blast cleaning room:**
An enclosed room where blasting operations are performed by an operator who works from inside the room using a blasting nozzle to direct the flow of abrasive material.

**Blasting cabinet:**
An enclosure where the operator stands outside using a blasting nozzle through an opening, or openings in the enclosure.

**Dust collector:**
A device in an exhaust ventilation system used to remove dust from air.

**Exhaust ventilation system:**
A system that removes contaminated air using the following:
- Enclosure or hood
- Duct work
- Dust collecting equipment
- Exhaust
- Discharge stack

**Local exhaust ventilation:**
The mechanical removal of contaminated air from the point where the contaminant is being generated or liberated.

**Make-up air systems:**
A ventilation system that controls the volume of outdoor air supplied to a building to replace air being exhausted.

**Rotary blast cleaning table:**
An enclosure where the pieces to be cleaned are placed on a rotating table and passed automatically through a series of blast sprays.
Tempered make-up air:
Air which has been conditioned by changing its heat content to get a specific desired temperature.

Ventilation:
The provision, circulation or exhausting of air into or from an area or space.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 06-12-074, § 296-818-500, filed 6/6/06, effective 9/1/06.]