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

[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 296-818-200 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, § 296-818-200, 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;
- 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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### PROVIDE

<table>
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<th>WHEN</th>
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| **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

**made of heavy canvas or leather;**  
**OR**  
**Equivalent protection**

| 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 housekeeping requirements, see the Safety and health core rules, chapter 296-800 WAC, Housekeeping, WAC 296-800-220.
– 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
  • 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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<tr>
<td></td>
<td>– Visible spurts of dust</td>
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<tr>
<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>
</tr>
<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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<tr>
<td>Notes:</td>
<td>• If the safety glass shatters, the protective screening will help contain the glass and protect employees from cuts and lacerations.</td>
</tr>
<tr>
<td></td>
<td>• Hard, deep cutting abrasives may shatter normal glass.</td>
</tr>
<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>Note:</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>
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</tbody>
</table>

References: For more information on:
• Air velocities, refer to the following:
  – The latest edition of Recommended Industrial Ventilation Guidelines (ACGIH)
  – NIOSH 1976 Industrial Ventilation
• Exit routes, go to the Safety and health core rules, WAC 296-800-310.

WAC 296-818-30015 Blast cleaning nozzles.
You must:
• Make sure nozzles are all of the following:
  – Mounted on a support when not in use
  – Equipped with operating valves that are manually held open.

Note: • To help prevent the buildup of static charges, pressurized tanks used to supply abrasive should be:
  – Connected to the manual control of the nozzle; and
  – Have the relief valve or opening located so it can safely vent.

WAC 296-818-400 Exhaust ventilation systems—Summary contents.
Your responsibility:
To make sure exhaust ventilation systems meet these requirements
Construction
WAC 296-818-40005
Explosion venting and wiring
WAC 296-818-40010
Inspection and maintenance
WAC 296-818-40015

WAC 296-818-40005 Construction.
You must:
• Make sure exhaust systems are constructed, installed, inspected, and maintained to meet both of the following:
  – The American National Standards Institute (ANSI), Z9.2-2001 for:
    ■ Fundamentals Governing the Design and Operation of Local Exhaust Systems
  – The National Fire Protection Association (NFPA) 91-2004 for:
    ■ Exhaust Systems for Air Conveying of Vapors, Gases and Noncombustible Particulate Solids.

Reference: • Refer to the American National Standards Institute, ANSI Z9.4-1997 for information on the following:

WAC 296-818-40010 Explosion venting and wiring.
You must:
- Follow the requirements in Table-3 for flammable or combustible dust mixtures

**Table-3: Explosion Venting and Wiring**

<table>
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<th>Then</th>
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| Flammable or explosive dust mixtures that may be present | Make sure the construction of equipment, including the exhaust system and all electrical wiring, meets both of the following:  
- The electrical requirements for Class II locations in WAC 296-24-95613, located in Part L of chapter 296-24 WAC. |
| 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:  
- Provides pressure relief in case of an explosion.  
- Are located away from occupied areas.  

WAC 296-818-500 Definitions.

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

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

**Abrasiv-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  
- Exhauster  
- 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.]