

CONTROL OF SILICA DUST IN CONSTRUCTION

Handheld Power Saws Used to Cut Fiber-Cement Board

Using a handheld circular saw to cut fiber-cement board can generate *respirable crystalline silica* dust. When inhaled over time, the small particles of silica can irreversibly damage the lungs. This fact sheet describes dust controls to minimize the amount of airborne dust when using handheld circular saws with a blade diameter of 8 inches or less to cut fiber-cement board as listed in Table 1 of the Respirable Crystalline Silica Standard for Construction, [29 CFR 1926.1153](#).

Engineering Control Method: Vacuum Dust Collection System

Fiber-cement board is a composite material made from cement, sand, and cellulose fibers. Cutting fiber-cement boards with high speed circular saws generates airborne dust that contains respirable crystalline silica. Specialty saw blades having 4–8 teeth reduce the amount of respirable dust compared to standard masonry blades. Blades with polycrystalline diamond tips are recommended for longer cutting life.

Vacuum Dust Collection System (VDCS)

A commercially-available VDCS can be used to control dust when cutting fiber-cement board outdoors with a handheld power saw equipped with a blade of 8 inches or less.

The VDCS includes:

- A handheld circular saw with a partially enclosed saw blade equipped with either an integrated dust collection port, or a commercially available adapter installed per manufacturer's directions.
- A fiber-cement saw blade less than 8 inches in diameter.
- A vacuum that is recommended by the tool manufacturer with enough air flow to capture dust at the cutting point. Use a vacuum rated at 80 cubic feet per minute or higher for effective capture.

- Filter with a 99 percent or greater efficiency in the vacuum exhaust. HEPA filters may be used but are not required. For longer filter life, use of a disposable filter bag or cyclone pre-filter is recommended.
- A vacuum exhaust hose capable of providing the airflow recommended by the tool manufacturer. A 1.25" to 2" diameter vacuum hose is typically adequate.



Photo courtesy of NIOSH

Worker cutting fiber-cement board outdoors using a handheld power saw with a vacuum dust collection system. The dust collection system consists of a saw with a partially enclosed blade, vacuum hose, and dust collector positioned between the saw horses. Note that while this system is effective at controlling dust, some dust is still visible.

A VDCS is most effective when workers are properly trained and use good work practices. Focus on the following areas:

- **Keep** the vacuum hose clear and free of debris, kinks, and tight bends.

- **Turn** the vacuum off and on regularly to reduce dust buildup on the filter, if it is not self-cleaning. For best results, use a vacuum with an actuator switch that allows the vacuum to be powered on and off using the saw.
- **Change** vacuum-collection bags at least as often as the manufacturer recommends.
- **Set up** a regular schedule for maintenance.
- **Avoid** exposure to dust when changing vacuum bags and cleaning or replacing air filters.

Compressed Air. Unless there is a ventilation system that effectively captures the dust cloud, do not use compressed air or blowers to clean surfaces, clothing, or filters because it can increase exposure to silica. Instead, clean only with a HEPA filter-equipped vacuum or by wet methods.

Respiratory Protection

When properly used, a VDCS can effectively control silica dust. Therefore, Table 1 does not require use of respiratory protection when cutting fiber-cement board **outdoors** using a handheld power saw with a blade 8 inches or smaller in diameter. For **indoor** use, or with blades **larger** than 8 inches, Table 1 does not apply and the employers must conduct an exposure assessment and may need to take additional action, including the implementation of a respiratory protection program.

Additional Information

For more information, visit www.osha.gov/silica and see the OSHA Fact Sheet on the [Crystalline Silica Rule for Construction](#), and the [Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for Construction](#).

OSHA can provide compliance assistance through a variety of programs, including technical assistance about effective safety and health programs, workplace consultations, and training and education.

OSHA's On-Site Consultation Program offers free, confidential occupational safety and health services to small and medium-sized businesses in all states and several territories across the country, with priority given to high-hazard worksites. On-Site consultation services are separate from enforcement and do not result in penalties or citations. To locate the OSHA On-Site Consultation Program nearest you, visit www.osha.gov/consultation.

Workers' Rights

Workers have the right to:

- Working conditions that do not pose a risk of serious harm.
- Receive information and training (in a language and vocabulary the worker understands) about workplace hazards, methods to prevent them, and the OSHA standards that apply to their workplace.
- Review records of work-related injuries and illnesses.
- File a complaint asking OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA's rules. OSHA will keep all identities confidential.
- Exercise their rights under the law without retaliation, including reporting an injury or raising health and safety concerns with their employer or OSHA. If a worker has been retaliated against for using their rights, they must file a complaint with OSHA as soon as possible, but no later than 30 days.

For additional information, see [OSHA's Workers page](#).

How to Contact OSHA

Under the Occupational Safety and Health Act of 1970, employers are responsible for providing safe and healthful workplaces for their employees. OSHA's role is to ensure these conditions for America's working men and women by setting and enforcing standards, and providing training, education and assistance. For more information, visit www.osha.gov or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.



U.S. Department of Labor



**Occupational
Safety and Health
Administration**

DSG FS-3927 12/2017