

## Engineered Stone Countertop Fabrication

### What is “engineered stone”?

Engineered stone is a manufactured composite material made up of crushed stone containing more than 90% silica bound together by a resin, often used for countertops.

### What is the concern?

Employees can be exposed to dangerous levels of airborne silica dust from working with engineered stone. Workers who fabricate and install quartz-engineered stone are at increased risk for overexposure to airborne silica during sizing, shaping, cutting, grinding, and polishing. Certain housekeeping methods, such as dry sweeping or using compressed air, can also cause high dust exposures and increase workers’ risk of serious lung problems.

Breathing too much respirable crystalline silica can cause:

- Lung cancer.
- Silicosis, an incurable lung disease.
- Kidney and autoimmune diseases.



In September 2019, researchers reported on 18 cases of silicosis in four states – the six cases in California included two fatalities. Workers were found also to suffer from related autoimmune disease and dormant tuberculosis infection. Most of the workers identified were less than 50 years of age and yet had severe, progressive disease. The two fatalities involved workers less than 40 years of age.



Recent screenings of at-risk stone fabrication workers in Queensland, Australia, identified 98 silicosis cases out of 799 screened workers, indicating that more surveillance would demonstrate this is a much more severe problem in U.S. industry than previously known.

Cal/OSHA requires that employers make medical examinations available to employees (at no cost) if their work exposure to respirable crystalline silica is at or above 25  $\mu\text{g}/\text{m}^3$  calculated as an 8-hour time weighted average, for 30 or more days per year.

Cal/OSHA and the California Department of Public Health encourage employers to provide medical surveillance to all employees exposed to silica for more than 30 days per year, without regard to their exposure level, for the following reasons:

- The early stages of lung disease are not obvious and affected employees may not be aware until the disease has progressed.
- There may be significantly more undiagnosed and misdiagnosed cases of respiratory disease.

## How to prevent overexposures to workers?

The best way is keep the dust out of the air by using:

- **Water** when cutting, grinding, and shaping, whenever possible.
- **Local exhaust ventilation** at the source generating the airborne dust.

The types of controls used for cutting or grinding natural stone countertops can usually be effectively used for engineered stone.

No matter which controls are used, it is very important that they be properly:

- **Designed**, as most homemade or aftermarket controls do not work as well as those designed by the manufacturer of the machine.
- **Maintained**.
- **Used** according to the manufacturer instructions, including using the required amounts of exhaust ventilation or water.

**Respirators** should only be used:

- As a last resort for protection when local exhaust ventilation or water controls are not feasible or do not adequately control employee airborne exposures.
- Where exposures exceed the permissible exposure limit (50 µg/m<sup>3</sup>, 8-hour TWA) while installing or implementing feasible engineering and work practice controls.
- When the employee is in a regulated area.



**Housekeeping methods** such as dry sweeping and using compressed air can result in high dust exposures and must be avoided, where feasible. **Use water or a properly filtered vacuum.**



## What are the Cal/OSHA regulatory requirements?

**Respirable Crystalline Silica Standards - Important Update** outlines the relevant Title 8, California Code of Regulations requirements:

- **5204**: Countertop manufacturing
- **1532.3**: Construction
- **5155**: Permissible Exposure Levels

Besides silica, a number of other hazards may be present in an engineered stone countertop fabrication workplace, including:

- Other hazardous materials, such as granite, resins, solvents, and coatings.
- Machine and electrical hazards.
- Noise.
- Back and other musculoskeletal injuries from lifting heavy countertops.
- Crushing hazards from working around forklifts moving slabs in the yard.

All **Title 8** regulations that may apply to these and other hazards in an engineered stone fabrication workplace can be found at [www.dir.ca.gov/samples/search/query.htm](http://www.dir.ca.gov/samples/search/query.htm).

## What other resources are available?

- **Cal/OSHA Publications**
  - **Guide to the California Hazard Communication Regulations**
  - **Guide to Developing Your Workplace Injury & Illness Prevention Program**
  - **Hazard Alert in the Granite Countertop Industry**
  - **Injury & Illness Prevention Model Program for High Hazard Employers**
  - **Respiratory Protection in the Workplace**
- California Department of Public Health, Occupational Health Branch: **Silica Safety Resources for Stone Fabricators**
- **Federal OSHA**
  - Safety and Health Topics - **Crystalline Silica**
  - **Ventilation**
- **NIOSH Workplace Safety and Health Topics**
- **CPWR** — The Center for Construction Research and Training
  - **“Work Safely with Silica”**

September 2023



This document is available with active links at [www.dir.ca.gov/dosh/dosh\\_publications](http://www.dir.ca.gov/dosh/dosh_publications)  
For assistance regarding this subject matter, employers may contact  
Cal/OSHA Consultation Services at 1-800-963-9424 or [InfoCons@dir.ca.gov](mailto:InfoCons@dir.ca.gov)  
[www.dir.ca.gov/dosh/consultation.html](http://www.dir.ca.gov/dosh/consultation.html)

© 2023 California Department of Industrial Relations

