



Honeywell | Industrial Safety



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RESPIRATORY PROTECTION
OSHA Standard for Silica

Honeywell

OSHA Standards for Silica

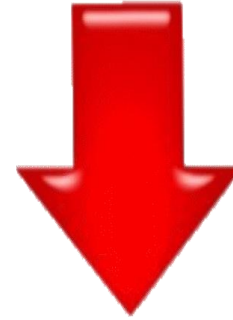


- **OSHA has introduced two new Standards for Silica**
 - For General Industry: 29 CFR1910.1053
 - Maritime Industry is covered under the General Industry Standard
 - For Construction Industry: 29 CFR1926.1153
- **Effective Date for both: June 23, 2016**
- **Dates for Compliance:**

ACTION	General Industry	Construction Industry
Full Compliance, except for 1) Medical Surveillance, and 2) Engineering Controls for Hydraulic Fracturing	June 23, 2018	June 23, 2017
Sample Analysis	June 23, 2018	June 23, 2018
Medical Surveillance for employees exposed \geq the PEL for 30 or more days per year	June 23, 2018	June 23, 2017
Medical Surveillance for employees exposed \geq the Action Level for 30 or more days per year	June 23, 2020	June 23, 2017
Engineering Controls for Hydraulic Fracturing	June 23, 2021	Not Applicable

OSHA Standards for Silica

- **The Permissible Exposure Level (PEL) has been lowered to 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)**
 - This is equivalent to $.05 \text{ mg}/\text{m}^3$
 - The previous level was defined in OSHA Table Z-3
- **An Action Level of $25 \mu\text{g}/\text{m}^3$ has been added**
 - The Action Level, in this case half the PEL, triggers some requirements of a Respiratory Protection Program, but does not require the use of a respirator.
 - For the Silica Standard if the exposure is at or above the Action Level but below the PEL employers must
 - Monitor employee exposure
 - Initiate medical surveillance



OSHA Standards for Silica

- The new PEL replaces the complicated calculation using OSHA Table Z-3
 - Example: for respirable quartz, PEL was 10 mg/m^3 , divided by the percent of silica (SiO_2) in the respirable quartz, plus 2

Excerpt: OSHA TABLE Z-3 Mineral Dusts

Substance	mppcf ^a	mg/m ³
Silica: Crystalline		
Quartz (Respirable)	$\frac{250^b}{\% \text{ SiO}_2 + 5}$	$\frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$
Quartz (Total Dust)		$\frac{30 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$

^a Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.

^b The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.

OSHA Standards for Silica

- **Some Key Requirements**

- Frequency of air monitoring
- Stresses use of Engineering controls
- Construction Standard lists specific Engineering Controls for various applications and equipment that is used in construction

- *Example:*

(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills)

- **Use drill equipped with commercially available shroud or cowling with dust collection system.**
- **Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.**
- **Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.**
- **Use a HEPA-filtered vacuum when cleaning holes.**

OSHA Standards for Silica

- **Some Key Requirements**

- Employer must implement a Written Exposure Control Plan
- Medical Surveillance of all affected employees must be initiated if the exposure is at or above the Action Level
- Medical Exam for all affected employees
 - A baseline Medical Exam within 30 days after initial assessment
 - Repeated every 3 years, minimum
- Medical Exam must include
 - Chest X-Ray
 - Pulmonary Function Test (PFT)
 - Test for Tuberculosis
- Specific Hazard Communication requirements
- Specific Training requirements in addition to Training required as part of the Respiratory Protection Program

OSHA Standards for Silica

- **The Differences Between the General Industry and Construction Standards**
 - OSHA recognized that the Construction Industry has some unique challenges. To help employers and keep all workers safe, OSHA has issued two Standards.
 - Construction job sites change, so OSHA focused on specific applications and use of equipment that are common in the construction industry
 - Silica exposure is extremely common in the construction industry, highlighting the need to protect workers
 - Construction Industry must be in compliance sooner than General Industry for some requirements
 - OSHA estimated the exposure levels for specific applications and use of equipment, making it easier to select the right respirator
 - OSHA's prescribed engineering controls must be in place
 - Baseline and follow-up medical exams are required for all workers who wear a respirator 30 days or more annually

OSHA Standards for Silica

- **What is Silica?**

- Silica, the most common element found on Earth, is a compound of silicon and oxygen. Its symbol is SiO_2 .
- It is a particulate – which means the right air-purifying respirator includes a filter. N95 filters will be sufficient for most exposures, but a P100 will provide maximum efficiency.
- It is found in several varieties, the most common are
 - Quartz (comprises 13% of the earth's surface)
 - Cristobalite
 - Tridymite
- When airborne it is called respirable crystalline silica



OSHA Standards for Silica

- **Where can Silica be found?**

- Concrete
- Granite
- Quartz
- Sand



- **Just a Few Industries and Applications**

- Construction
 - Almost every application involving brick, stone, concrete and earth moving, including abrasive blasting (it's not the sand, it's the surface)
- Hydraulic Fracturing (Fracking)
- Strip Mining (though Strip Mining is regulated by MSHA)
- Countertop Construction & Installation
- Landscaping
 - Installation of Pavers



OSHA Standards for Silica

- **Respirator Selection**

- Depending on the concentration, may be a N95 Disposable, a half mask with P100, or if the concentration is high enough – and with new PEL its not that much – you need a PD-SAR or SCBA.

- **Two Honeywell Respirator Selection Guides for Silica**

- General Industry
- Construction Industry
 - Lists specific tasks and the engineering controls, with OSHA's estimated PEL for less than 4 hours and 4+ hours per day exposure

OSHA Standards for Silica

- Available on the Honeywell web site to share with your Customers
 - Overview of OSHA's Silica Standards
 - Respirator Selection – General & Maritime Industry
 - Respirator Selection – Construction Industry
 - Silica Standard FAQ
 - Overview of OSHA's Respiratory Protection Standard 29 CFR 1910.134
 - Copies of the two OSHA Silica Standards

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REGULATORY INFORMATION

OSHA Standards for Protection from Silica Exposure
Overview of OSHA 29 CFR 1910.1005 & 29 CFR 1926.1153

Occupational Safety and Health Administration (OSHA) has promulgated the final Rule for occupational exposures to respirable crystalline silica. There are two separate standards, the first one covering maritime and offshore, and the second covers construction. These two new standards build on the first, but are quite significant differences with some of the requirements. This is a brief overview of these two standards to serve as a guide. The overview does not represent a thorough understanding of all requirements, including the respiratory protection standard 29 CFR 1926.104. Copies of the complete standards and worksheets can be downloaded from our site <http://honeywell.com>. Regulations are codified by 29 CFR Part 1926.

Key definitions are included at the end of this document.

OSHA/NIOSH Requirements	OSHA/NIOSH MARITIME AND OFFSHORE	OSHA/NIOSH CONSTRUCTION
Standard	29 CFR 1910.1005	29 CFR 1926.1153
Effective Date	June 23, 2016	June 23, 2017
OSHA/NIOSH Mandate for Compliance	June 23, 2016	June 23, 2017
Compliance Period	June 23, 2016	June 23, 2018
Medical Surveillance for employees exposed to the PEL for 30 or more days per year	June 23, 2016	June 23, 2017
Medical Surveillance for employees exposed to the PEL for 30 or more days per year	June 23, 2020	June 23, 2017
Engineering Controls for Hydraulic Excavators	June 23, 2021	Not Applicable
Respirator Levels	25 µg/m³	25 µg/m³
NIOSH PEL	50 µg/m³	50 µg/m³

Additional information regarding the new standards is available on our website. For more information, please visit honeywell.com.

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TECHNICAL DATA

Guide to Respiratory Protection from Silica
OSHA 29 CFR 1910.134 for Construction Industry

When Engineering and Administrative controls are insufficient to reduce respirable crystalline silica exposure, the use of respirators is required. This document provides a guide to help you select the appropriate respirator for your work. It also includes information on how to ensure that your respirator program is effective.

OSHA 29 CFR 1926.1153 TABLE 1

Equipment or Task	Engineering and Work Practice Controls
1) Occupational history data	Use data equipment with integrated system that continuously feeds data to a computer and maintain log to archive manufacturer's instructions to review.
2) Hazardous duty areas (see hazard assessment)	Use data equipment with integrated system that continuously feeds data to a computer and maintain log to archive manufacturer's instructions to review. - When used outdoors. - When used indoors or in an enclosed space.
3) Hazardous duty areas for cutting, grinding, or abrading with tools	Use data equipment with continuously operating data collection system to record manufacturer's instructions to review. - Dust collector must provide the air to be measured by the tool manufacturer and have a filter with 99% or greater efficiency.

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FREQUENTLY ASKED QUESTIONS

OSHA Standard for Protection from Silica Exposure
29 CFR 1910.1005 Standard for General Industry and Maritime
29 CFR 1926.1153 Standard for Construction

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Occupational Safety & Health Administration (OSHA) create a new standard for silica?
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What are the most significant changes from the previous regulation for protection from crystalline silica?
The new standards include significant changes to the PELs for general industry and maritime, and construction. The new standards also include a new requirement for employers to provide training to employees on the new standards. The most significant changes include:
- The new PEL for general industry and maritime is 25 µg/m³, down from 50 µg/m³.
- The new PEL for construction is 25 µg/m³, down from 50 µg/m³.
- The new standards include a requirement for employers to provide training to employees on the new standards.
- The new standards include a requirement for employers to provide medical surveillance to employees exposed to the new standards.

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