UNDERSTANDING THE OSHA CRYSTALLINE SILICA DUST RULE
Announced on March 25, 2016
AGENDA

- Timing of Silica dust standards in the U.S.
- Summary of the new standard
  - OSHA standard part 1926.1153 crystalline Silica construction summary
- Compliance options
  - Table 1 – Use of pre-defined OSHA approved controls
  - Performance or objective data option – compliance through objective data
  - Scheduled monitoring option – providing compliance through a self monitoring program
- Additional construction requirements
- Questions
OSHA’s New Crystalline Silica Rule for Construction Implementation Schedule

- OSHA published a new rule for silica for the construction industry on March 25, 2016. The new rule was effective June 23, 2016. Employers have one year and three months to phase in compliance with parts of the rule.
- Part 1926.1153 of OSHA crystalline silica rule covers construction
- OSHA postponed full employer and product compliance to September 23, 2017, but VA is still required for compliance on the original date June 23, 2017.

Source: www.osha.gov/silica

<table>
<thead>
<tr>
<th>Activity</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Announcement</td>
<td>3/2016</td>
<td></td>
</tr>
<tr>
<td>Effective</td>
<td>6/2016</td>
<td>6/23/2017</td>
</tr>
<tr>
<td>Full compliance</td>
<td></td>
<td>9/23/2017</td>
</tr>
</tbody>
</table>
AGENDA

• Timing of Silica dust standards in the U.S.

  • Summary of the new standard
    – OSHA standard part 1926.1153 crystalline Silica construction summary

  • Compliance options
    – Table 1 – Use of pre-defined OSHA approved controls
    – Performance or objective data option – compliance through objective data
    – Scheduled monitoring option – providing compliance through a self monitoring program

• Additional construction requirements
• Questions
SUMMARY OF NEW STANDARDS – COMPLIANCE DUE BY SEPTEMBER 23, 2017 (OR JUNE 23, 2017 IN VA)

What is OSHA 29 CFR 1926.1153?

- The new standard requires a more stringent “permissible exposure limit”, moving from approx. 250 micrograms / m³ over an 8 hour day (time weighted average) to 50 micrograms / m³ over an 8 hour day.

- **OSHA has provided three options for compliance in the new standard**
  1. Table 1: a table of pre-defined applications and approved control solutions available in the market today
  2. Performance or Objective data: Providing objective data proving the control method used reduces silica dust exposure below the stated permissible exposure limit (50 micrograms / m³)
  3. Scheduled self-monitoring program to ensure employees are not exposed to applications exceeding 50 micrograms / m³ in an 8-hour work day

- **In addition, in the construction industry employers are required to also implement additional requirements:**
  - Offer medical exams to workers required to wear a respirator 30 or more times in a year
SUMMARY OF NEW STANDARDS – COMPLIANCE DUE BY SEPTEMBER 23, 2017 (OR JUNE 23, 2017 IN VA)

Additional requirements

• Develop and keep a written exposure control plan

• Designated a key competent person to implement the exposure control plan, identify exposure risks, take actions to correct exposure issues

• Train workers to work safely with regards to silica dust

• Restrict housekeeping practices (dry sweeping) when silica dust is involved

• Maintain records of the above
AGENDA

- Timing of Silica dust standards in the U.S.
- Summary of the new standard
  - OSHA standard part 1926.1153 crystalline Silica construction summary
- Compliance options
  - Table 1 – Use of pre-defined OSHA approved controls
    - Performance or objective data option – compliance through objective data
    - Scheduled monitoring option – providing compliance through a self monitoring program
- Additional construction requirements
- Questions
**TABLE 1: OPTION TO USE PRE-DEFINED OSHA APPROVED CONTROLS FROM TABLE 1 LIST**

- **Examples of control measures found in Table 1** of the ruling include:
  - Water-fed solutions (i.e. diamond coring and cutting with gas powered saws)
  - Use of a dust-collection system with an approved vacuum based on tool type for dry cutting, grinding, drilling, breaking

- **Example: Dust Controls in Construction**
  - The most common methods of limiting Silica exposures in construction tasks are wet methods, where water is used to keep Silica-containing dust form getting into the air, and vacuum dust collection systems, which capture dust at the point it is made.

- **Examples of common Hilti relevant applications found in Table 1:**
  - Gas saw cutting – wet
  - Coring – wet
  - Drilling – w/ shroud and vacuum system
  - Breaking – wet or with shroud and vacuum system
  - Grinding – wet or with shroud and vacuum system

In Table 1 of the standard, unlike in the proposed rule, employers who fully and properly implement the controls listed on Table 1 are not separately required to comply with the PEL, and are not subject to provisions for exposure assessment and methods of compliance. The entries on Table 1 have also been revised extensively.
TABLE 1 SOLUTIONS MAY REQUIRE APF 10 OR APF 25 RESPIRATOR USE

**APF 10**
- Half mask/Dust mask
  - APF=10
  - Needs to be fit tested
- Half mask (Elastomeric)
  - APF=10
  - Needs to be fit tested

**APF 25**
- Loose-Fitting Powered Air-Purifying Respirator (PAPR)
  - APF=25
- Hood Powered Air-Purifying Respirator (PAPR)
  - APF=25

*APF = Assigned protection factor*
TABLE 1: LISTS WATER AS AN ACCEPTABLE CONTROL MEASURE WITH SOME TOOL TYPES

Table 1 example – Rig-mounted core drill (core rig)

<table>
<thead>
<tr>
<th>Equipment/task</th>
<th>Engineering and work practice control methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>(vi) Rig-mounted core saws or</td>
<td>Use tool equipped with integrated water delivery system that supplies water to cutting surface.</td>
</tr>
<tr>
<td>drills.</td>
<td>Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions.</td>
</tr>
</tbody>
</table>

| Required respiratory protection | ≤4 hours/shift | >4 hours/shift |
| and minimum assigned protection | None           | None.          |
| factor (APF)                    |                |                |
**TABLE 1: WET CUTTING WITH A SAW IS ALLOWED BUT REQUIRES A RESPIRATOR IF CUTTING INSIDE OR MORE THAN 4 HOURS OUTSIDE**

Table 1 example – Hand held power saw (Gas saw)

<table>
<thead>
<tr>
<th>Equipment/task</th>
<th>Engineering and work practice control methods</th>
<th>Required respiratory protection and minimum assigned protection factor (APF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii) Handheld power saws (any blade diameter)</td>
<td>Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions. When used outdoors. When used indoors or in an enclosed area.</td>
<td>≤4 hours/shift: None &gt;4 hours/shift: APF 10</td>
</tr>
</tbody>
</table>

Source: www.osha.gov/silica
TABLE 1: BREAKING CONCRETE REQUIRES A RESPIRATOR INDOORS OR IF BREAKING FOR >4 HOURS OUTDOORS

Table 1 example – Handheld chipping tools (breakers)

<table>
<thead>
<tr>
<th>Equipment/task</th>
<th>Engineering and work practice control methods</th>
<th>Required respiratory protection and minimum assigned protection factor (APF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(x) Jackhammers and handheld powered chipping tools.</td>
<td>Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact:</td>
<td>≤4 hours/shift: None .......... APF 10.</td>
</tr>
<tr>
<td></td>
<td>—When used outdoors ..........................................................................................................................</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—When used indoors or in an enclosed area .........................................................................................</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>Use tool equipped with commercially available shroud and dust collection system.</td>
<td>&gt;4 hours/shift: APF 10.</td>
</tr>
<tr>
<td></td>
<td>Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions.</td>
<td></td>
</tr>
<tr>
<td>Dust collector must provide the air flow recommended by the tool manufacturer,</td>
<td>Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact:</td>
<td></td>
</tr>
<tr>
<td>or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism:</td>
<td>—When used outdoors ..........................................................................................................................</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—When used indoors or in an enclosed area .........................................................................................</td>
<td></td>
</tr>
<tr>
<td>HEPA filter is not required for breaking</td>
<td></td>
<td>Source: <a href="http://www.osha.gov/silica">www.osha.gov/silica</a></td>
</tr>
</tbody>
</table>

OSHA Crystalline Silica Rule for Construction | February 15, 2017
TABLE 1: DRY SOLUTIONS WITH DUST SHROUD & HOOD REQUIRE A VACUUM WITH 99% FILTER EFFICIENCY AND A FILTER-CLEANING MECHANISM

Table 1 example – Handheld drills

<table>
<thead>
<tr>
<th>Equipment/task</th>
<th>Engineering and work practice control methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills).</td>
<td>Use drill equipped with commercially available shroud or cowling with dust collection system.</td>
</tr>
<tr>
<td></td>
<td>Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

| Required respiratory protection and minimum assigned protection factor (APF) |
|------------------|---------------|
| ≤4 hours/shift   | >4 hours/shift|
| None             | None          |

HEPA filter is not required for drilling

Source: [www.osha.gov/silica](http://www.osha.gov/silica)
TABLE 1: TRADITIONAL ANCHOR HOLE CLEANING IS ONLY THE HILTI RELEVANT APPLICATION REQUIRING A HEPA-FILTERED VACUUM TO CAPTURE DUST

<table>
<thead>
<tr>
<th>(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills)</th>
<th>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.</th>
</tr>
</thead>
</table>

High-efficiency particulate air (HEPA) filter means a filter that is at least 99.97 percent efficient in removing mono-dispersed particles of 0.3 micrometers in diameter.

Source: www.osha.gov/silica
OSHA IDENTIFIES THAT SAFESET SYSTEMS ELIMINATE THE NEED FOR HOLE CLEANING AND THUS HEPA FILTERED VACUUM

HDB specifically called out as a way to meet the OSHA requirements

Hilti offers both hollow drill bit and HIT-Z rod solutions which eliminate the need for hole cleaning.

Source: [www.osha.gov/silica](http://www.osha.gov/silica)
AGENDA

• Timing of Silica dust standards in the U.S.
• Summary of the new standard
  – OSHA standard part 1926.1153 crystalline Silica construction summary
• Compliance options
  – Table 1 – Use of pre-defined OSHA approved controls
  – **Performance or objective data option – compliance through objective data**
    – Scheduled monitoring option – providing compliance through a self monitoring program
• Additional construction requirements
• Questions
EMPLOYERS CAN USE OBJECTIVE DATA TO PROVE SYSTEM COMPLIANCE AND POTENTIALLY REMOVE RESPIRATOR REQUIREMENT

Performance or Objective data option:

- Use data from an internal, industry or 3rd party testing, to determine the amount of respirable silica that workers are exposed to, it may be at or above an action level of 25 μg/m³ (micrograms of silica per cubic meter of air), averaged over an eight-hour day.

- Use dust controls to protect workers from silica exposures above the action level of 25 μg/m³ (micrograms of silica per cubic meter of air), averaged over an eight-hour day.

- Use data from an internal, industry or 3rd party testing to prove workers are exposed to less than the respirable crystalline silica PEL of 50 μg/m³, averaged over an eight-hour day.

- Respirators would not be required if workers are exposed to less than the respirable crystalline silica PEL of 50 μg/m³, averaged over an eight-hour day.

- Provide respirators to workers when dust controls cannot limit exposures to the PEL.

(ii) Performance option. The employer shall assess the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data or objective data sufficient to accurately characterize employee exposures to respirable crystalline silica.

“Objective data may come from the manufacturer”

Source: www.osha.gov/silica
AGENDA

- Timing of Silica dust standards in the U.S.
- Summary of the new standard
  - OSHA standard part 1926.1153 crystalline Silica construction summary
- Compliance options
  - Table 1 – Use of pre-defined OSHA approved controls
  - Performance or objective data option – compliance through objective data
  - **Scheduled monitoring option – providing compliance through a self monitoring program**
- Additional construction requirements
- Questions
SCHEDULED SELF-MONITORING OPTION IS ALLOWED UNDER NEW OSHA STANDARDS

Scheduled self-monitoring option

- If following this option, employers will need to perform scheduled monitoring to prove how many micrograms of silica are created per cubic meter of air in a time-weighted average over an 8 hour work day.
- Monitoring and dust controls are required to be used once workers are exposed to more than 25 micrograms (action level) of respirable silica per cubic meter of air in a time-weighted average over an 8 hour work day.
- When performing these applications, employers will be required to use control measures (wet cutting, dust hoods w/ vacuums) to keep the exposure level below 50 micrograms (PEL) of silica per cubic meter of air for a worker in a time-weighted average over an 8 hour work day.
- Provide respirators to workers when dust controls in place can’t limit exposures to a level below the PEL.

Source: www.osha.gov/silica
AGENDA

• Timing of Silica dust standards in the U.S.
• Summary of the new standard
  – OSHA standard part 1926.1153 crystalline Silica construction summary
• Compliance options
  – Table 1 – Use of pre-defined OSHA approved controls
  – Performance or objective data option – compliance through objective data
  – Scheduled monitoring option – providing compliance through a self monitoring program
• Additional construction requirements
• Questions
AS PART OF NEW OSHA STANDARDS, EMPLOYERS ARE ALSO REQUIRED TO TRAIN, DOCUMENT AND PUT INTO PLACE ADDITIONAL PRACTICES

**Additional construction requirements**

- Develop and keep a written exposure control plan
- Designated a key competent person to implement the exposure control plan, identify exposure risks, take actions to correct exposure issues
- Train workers to work safely with regards to silica dust
- Restrict housekeeping practices (dry sweeping) when silica dust is involved
- Offer medical exams during first 30 days to workers required to wear a respirator 30 or more days per year
- Keep records of the above

Regardless of which exposure control method is used, all construction employers covered by the standard are required to:

- Establish and implement a **written exposure control plan** that identifies tasks that involve exposure and methods used to protect workers, including procedures to restrict access to work areas where high exposures may occur.
- Designate a **competent** person to implement the written exposure control plan.
- Restrict **housekeeping** practices that expose workers to silica where feasible alternatives are available.
- Offer **medical exams** – including chest X-rays and lung function tests – every three years for workers who are required by the standard to wear a respirator for 30 or more days per year.
- **Train workers** on work operations that result in silica exposure and ways to limit exposure.
- **Keep records** of workers’ silica exposure and medical exams.

Source: [www.osha.gov/silica](http://www.osha.gov/silica)
Medical surveillance requirements

- Medical surveillance be made available within first 30 days to any worker who performs applications which require them to use a respirator for 30 or more days per year.

- Following Table 1 - Example of someone who might be required to be offered medical surveillance: worker who breaks concrete indoors 30 or more days during a year.

Source: www.osha.gov/silica
QUESTIONS

Question & Answer Session

Questions:

• Silicadustquestions@hilti.com

Resources:

• www.osha.gov/silica

• https://www.us.hilti.com/content/hilti/W1/US/en/services/power-tools/osha-silica-dust-regulations.html

• https://dust.us.hilti.com/ - summary of Hilti’s dust collection systems and solutions

Source: www.osha.gov/silica