



**OSHA 29 CFR 1926
Respirable Silica Dust Exposure
OBJECTIVE TEST DATA
USG Sheetrock® Brand Dust Control Joint Compound**

Independent industrial hygiene testing during sanding of USG Sheetrock® Brand Dust Control Joint Compound has shown levels of total and respirable airborne dusts below OSHA’s new permissible exposure limits (PEL).

Testing was performed under the following conditions:

- Room size of 16’ x 16’ x 8’
- Minimal air was exchanged during testing (\leq one AC/hour)
- Sanding was performed using a pole sander with 150 grit abrasive paper
- Air sampling was conducted for 2 hours with intermittent sanding totaling 12 minutes.*
- Temperature of 77 – 80°F and humidity of 59 – 64%RH
- Entire surfaces of three gypsum panels were coated with USG Sheetrock® Brand Dust Control Joint Compound
- Uniform mixed air was maintained in the room

Personal air samples were collected from the breathing zone of the worker. Air samples were collected and analyzed for total dust (a.k.a. particulates not otherwise regulated – PNOR), respirable dust and respirable crystalline silica. SKC aluminum cyclones and SKC disposable parallel particle impactors (PPI) were used to selectively sample respirable dust.

Total dust samples were analyzed using NIOSH method 0500. Respirable dust samples were analyzed for respirable dust and respirable crystalline silica per NIOSH Methods 0600 and 7500, respectively.

Results

Time-Weighted Average (TWA) Respirable Crystalline Silica Dust Exposure	Below detectable limit **	OSHA PEL = 50 $\mu\text{g}/\text{m}^3$
Time-Weighted Average (TWA) Total Dust Exposure	>70% below PEL	OSHA PEL = 15 mg/m^3

* See recent industrial hygiene studies on drywall workplace exposures: Boelter et al. 2015

** Cyclone samples have a detection limit of 16 $\mu\text{g}/\text{m}^3$. PPI samples have a detection limit of 10 $\mu\text{g}/\text{m}^3$.



29 CFR Sec. 1926.1153(d)(2)(ii) Performance Option Using USG Objective Data

Section 1926.1153(d)(2)(i) of the OSHA Silica Rule states:

“General. The employer shall assess the exposure of each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level in accordance with either the performance option in paragraph (d)(2)(ii) or the scheduled monitoring option in paragraph (d)(2)(iii) of this section.”

Section 1926.1153(d)(2)(ii) defines employers’ “Performance Option”:

“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.”

USG engaged an independent testing company, RJ Lee Group, Inc., to conduct testing to determine the respirable silica dust exposure associated with the application of **USG Sheetrock® Brand Dust Control Compound**. The testing was designed to provide an 8-hour Time-Weighted Average (TWA) for respirable silica exposure as required by OSHA. The purpose of these tests was to provide our customers with “Objective Data,” as described in the new Silica Rule, that can be used as part of employers’ exposure assessment requirements under Section 1926.1153(d)(2)(i) of the rule.

Testing was designed to reflect workplace conditions that closely resembled, or exceeded, potential respirable silica exposure under the workplace conditions and practices typically found on jobsites during the application of joint compound. The testing was performed for two hours in a 16’ x 16’ x 8’ closed room. Minimal air was exchanged during the testing period. Sanding was performed using a pole sander with 150 grit sandpaper, which was changed between each panel sanded. Oscillating fans were used to mix the air in the room. The joint compound selected for the testing had the highest bulk content of respirable crystalline silica in our network.

However, when applying the USG Objective Data to a specific jobsite exposure assessment, there are several issues that must be also considered:



1. More or less of the subject work performed on the jobsite over a certain period of time will increase or decrease the exposure level. USG's testing is based on workplace studies that show a drywall worker spends approximately 11% of his work day sanding.
2. The size of the room on a jobsite will impact exposure levels. The larger the room, the lower the potential exposure.
3. The level of air exchange on a jobsite will impact exposure levels. The greater the rate of air exchange, the lower the exposure. The USG testing was conducted in a closed room and intended to resemble a low air exchange rate and therefore, higher potential exposure conditions.
4. The level of exposure will be affected by the amount of joint compound that is being sanded off. Sanding in the USG testing was done on 4' x 8' panels that had been intentionally thick-coated to create higher exposure potential.
5. USG testing was performed with 150 grit sandpaper which is commonly used by professional drywall workers for the finishing/sanding step.