



MILWAUKEE TOOL

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To Whom It May Concern,

Milwaukee®, in partnership with Industrial Hygiene Sciences, LLC, has conducted testing on the Milwaukee M18™ FUEL™ PACKOUT Wet/Dry Vacuum (0970-20) with HEPA filter paired with the M18™ FUEL™ 1” SDS Plus D-Handle Rotary Hammer (2713-20), 5/8” X 8” SDS Plus 2-Cutter Carbide Tip bit (48-20-7602), and Hammer Vac Dust Extractor (5261-DE). Results show that the user will be below the Permissible Exposure Limit (PEL) as described by OSHA 29 CFR 1926.1153 when using the above combination, assuming it is used in accordance with manufacturer’s instructions. Testing results and procedures are outlined below:

Unit Tested	# of Holes Drilled	Average Sample Duration	% Silica (Quartz) in Sample	Average Respirable Crystalline Silica Concentration (µg/m³)	OSHA PEL in 1926.1153 (µg/m³)
	40	60 minutes	16.3%	7.8 µg/m³ TWA	50 µg/m³

- All drilling was performed using a Milwaukee M18™ FUEL™ PACKOUT Wet/Dry Vacuum (0970-20) with HEPA filter paired with the M18™ FUEL™ 1” SDS Plus D-Handle Rotary Hammer (2713-20), 5/8” X 8” SDS Plus 2-Cutter Carbide Tip bit (48-20-7602), and Hammer Vac Dust Extractor (5261-DE).
- The drilling was completed horizontally in a 4’ X 4’ X 8” Concrete Block mounted in an overhead fixture.
- Employee sat on a chair underneath the block and drilled 4” deep holes overhead.
- The concrete blocks were poured from a 5000 PSI concrete mix.
- A new HEPA filter and clean box were used for each trial.
- The HEPA filter was knocked into a 5-gallon bucket after every 10 holes drilled. The vacuum box was not emptied.
- The vacuum was turned to low speed.
- The trials were performed in an enclosure with no outside air ventilation. Ambient air cleaner with HEPA filtration was used between each trial.
- Samples were collected on 3-piece 37 mm diameter preweighed PVC filter mounted in a BGI GK2.69 respirable dust sampler, run at 4.2 lpm and connected to a GilAir Plus air sampling pump. The flow rate through the sampling train was measured using a TSI 4146 Calibrator before and after each Trial. A field blank was submitted with each day’s set of samples.
- Samples were analyzed using OSHA ID-142 by the Wisconsin Occupational Health Laboratory, an AIHA Accredited laboratory. The sampling method used meets the definition of respirable crystalline silica in 1926.1153 (a) and Appendix A of the OSHA Respirable Crystalline Silica Standard (1926.1153).
- The Time Weighted Average (TWA) was calculated assuming zero exposure to respirable crystalline silica for the non-sampled portion of a 480 minutes (8 hour) shift. Longer exposure times, assuming that the dust exposures would be similar to those collected in these trials, would likely result in higher TWAs. Factors, including, but not limited to, the ventilation and air flow patterns in the space where the work is done, how the tool is used, how sharp the blade is, the user’s technique, the silica content of the cement board, how many cuts are made, the presence of other respirable silica dust generating activities in the area, and vacuum maintenance could affect actual user exposures.

*A 5/8" X 8" SDS Plus 2-Cutter Carbide Tip bit reflects the dust generating application used in this test, the table below suggest other bit sizes, based on volume of dust, would also be compliant when using the Milwaukee M18™ FUEL™ PACKOUT Wet/Dry Vacuum.

Details on how to properly implement as a part of a complete exposure plan are outlined below*:

Maximum Number of Holes per Day**

Hole Diameter

Hole Depth		<u>3/16"</u>	<u>1/4"</u>	<u>3/8"</u>	<u>1/2"</u>	<u>5/8"</u>	<u>3/4"</u>
	<u>1"</u>	11,378	6,400	2,844	1,600	1,024	711
	<u>1.5"</u>	7,585	4,267	1,896	1,067	683	474
	<u>2"</u>	5,689	3,200	1,422	800	512	356
	<u>2.5"</u>	4,551	2,560	1,138	640	410	284
	<u>3"</u>	3,793	2,133	948	533	341	237
	<u>3.5"</u>	3,251	1,829	813	457	293	203
	<u>4"</u>	2,844	1,600	711	400	256	178

*These calculations are offered for reference and are calculated values based on previously recorded test data and represent a full workday of the tested application

** The user must drill the same number or fewer holes than those listed above for the given application in order to be considered compliant with the objective data clause of 29 CFR 1926.1153 OSHA regulation on crystalline silica dust.

It is the responsibility of the user to operate the tool in accordance with manufacturer’s instructions. For the latest listings of approvals, visit milwaukeetool.com. For technical or service assistance, contact Milwaukee Customer Service at 1-800-729-3878.