




# 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™ 2-Gallon Wet/Dry Vacuum (0880-20) 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 the 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	Average Sample Duration	% Silica (Quartz) in Sample	Average Respirable Crystalline Silica Concentration (µg/m³)	OSHA PEL in 1926.1153 (µg/m³)
	60.6 minutes	14.7%	47 µg/m³ TWA	50 µg/m³

- All drilling was performed using the Milwaukee M18™ 2-Gallon Wet/Dry Vacuum (0880-20) 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 the Hammer Vac Dust Extractor (5261-DE).
- Each trial consisted of a subject sitting in a chair and drilling 40 holes overhead into a 4’ X 4’ X 8” concrete block, which was mounted to a fixture. Each hole was 4 inches deep.
- A new HEPA filter and clean box were used for each new trial.
- The filter was knocked out into a 5-gallon bucket after every 10 holes drilled.
- The Vacuum dust box was not emptied during the trials.
- Work was performed in an enclosure with no outside ventilation. The room was aired out with a fan after every 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 Mesa Defender 520 before and after each Trial. A field blank was submitted with batches of samples.
- The samples and blank 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 dull the bit is, how flat the concrete surface is, User technique including how tightly the shroud is held against the concrete, how close the user is working to previously drilled holes that can disturb dust, the silica content of the concrete, the presence of other respirable silica dust generating activities in the area, how often the user knocks collected dust from the HEPA filter, how aggressively the HEPA filter is knocked off, how often the vacuum box is dumped and where the filter cleaning is done could affect actual user exposures.

\*Drilling with a 5/8" X 8" Bit reflects the dust generating application used in this test, the table below suggest other breaking times, based on volume of dust, would also be compliant when using the Milwaukee M18™ 2-Gallon Wet/Dry Vacuum.

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

### **Maximum Number of Holes Drilled per Day\*\***

		<b>Hole Diameter</b>							
		<b>1/4"</b>	<b>3/8"</b>	<b>1/2"</b>	<b>5/8"</b>	<b>3/4"</b>	<b>7/8"</b>	<b>1"</b>	<b>1-1/2"</b>
<b>Hole Depth</b>	<b>1"</b>	1,060	471	265	170	118	87	66	29
	<b>1.5"</b>	707	314	177	113	79	58	44	20
	<b>2"</b>	530	236	133	85	59	43	33	15
	<b>2.5"</b>	424	188	106	68	47	35	27	12
	<b>3"</b>	353	157	88	57	39	29	22	10
	<b>3.5"</b>	303	135	76	48	34	25	19	8
	<b>4"</b>	265	118	66	42	29	22	17	7

\*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](http://milwaukeetool.com). For technical or service assistance, contact Milwaukee Customer Service at 1-800-729-3878.