




# 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™ 9 Gallon Dual Battery Wet/Dry Vacuum (0920-20) with HEPA filter (49-90-1977) paired with the M18 FUEL™ 1" SDS Plus D-Handle Rotary Hammer (2713-20), SDS Plus 5/8" X 8" 2-Cutter Carbide Tip Bit (48-20-7602), and the M18 FUEL™ HAMMERVAC™ 1-1/4" Dedicated Dust Extractor. 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 # of Holes Drilled	Average Sample Duration	% Silica (Quartz) in Sample	Average Respirable Crystalline Silica Concentration (µg/m³)	OSHA PEL in 1926.1153 (µg/m³)
	30	60 minutes	N/A	< 2.53 µg/m³ TWA	50 µg/m³

<: Less than. The analyte, if present, is at a level too low to be accurately quantified by the method used. The actual amount in the sample is less than the reported value.

N/A= Not available. The percent silica could not be quantified as the weight gain on the filter was too low.

- All drilling was performed using a Milwaukee M18™ FUEL™ 9 Gallon Dual Battery Wet/Dry Vacuum (0920-20) paired with the M18 FUEL™ 1" SDS Plus D-Handle Rotary Hammer (2713-20), SDS Plus 5/8" X 8" 2-Cutter Carbide Tip Bit (48-20-7602), and the M18 FUEL™ HAMMERVAC™ 1-1/4" Dedicated Dust Extractor
- The drilling was completed overhead to a 4' X 4' X 8' concrete block mounted in a fixture.
- The concrete blocks were poured from a 5000 PSI concrete mix.
- A new HEPA filter and clean box were used for each trial.
- 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™ 9 Gallon Dual Battery 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

	<u>7/16"</u>	<u>1/2"</u>	<u>9/16"</u>	<u>5/8"</u>	<u>3/4"</u>	<u>7/8"</u>	<u>1"</u>	<u>1-1/8"</u>	<u>1-3/8"</u>
<b>1"</b>	4,839	3,705	2,927	2,371	1,646	1,209	926	731	489
<b>1.5"</b>	3,226	2,470	1,951	1,581	1,097	806	617	487	326
<b>2"</b>	2,419	1,852	1,463	1,185	823	604	463	365	244
<b>2.5"</b>	1,935	1,482	1,171	948	658	483	370	292	195
<b>3"</b>	1,613	1,235	975	790	548	403	308	243	163
<b>3.5"</b>	1,382	1,058	836	677	470	345	264	209	139
<b>4"</b>	1,209	926	731	592	411	302	231	182	122
<b>5"</b>	967	741	585	474	329	241	185	146	97
<b>6"</b>	806	617	487	395	274	201	154	121	81
<b>7"</b>	691	529	418	338	235	172	132	104	69
<b>8"</b>	604	463	365	296	205	151	115	91	61
<b>9"</b>	537	411	325	263	182	134	102	81	54
<b>10"</b>	483	370	292	237	164	120	92	73	48

\*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.