




# 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™ 1-9/16” SDS Max Rotary Hammer (2717-20), 1-1/4 X 15” SDS MAX 4-Cutter Carbide Tip bit (48-20-3970), and SDS Max Dust Extraction Attachment (5317-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 # of Holes Drilled	Average Sample Duration	% Silica (Quartz) in Sample	Average Respirable Crystalline Silica Concentration (µg/m³)	OSHA PEL in 1926.1153 (µg/m³)
	9	60.3 minutes	N/A	< 2.47 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.

NA= 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™ 1-9/16” SDS Max Rotary Hammer (2717-20), 1-1/4 X 15” SDS MAX 4-Cutter Carbide Tip bit (48-20-3970), and SDS Max Dust Extraction Attachment (5317-DE).
- The drilling was completed horizontally to a 4’ X 4’ X 8” concrete block mounted in an upright 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 high 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 1-1/4 X 15” SDS MAX 4-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

Hole Depth	Hole Diameter											
	<u>1/4"</u>	<u>3/8"</u>	<u>1/2"</u>	<u>5/8"</u>	<u>3/4"</u>	<u>1"</u>	<u>1-1/4"</u>	<u>1-1/2"</u>	<u>1-3/4"</u>	<u>2"</u>	<u>2-1/2"</u>	
<u>1"</u>	36,360	16,160	9,090	5,817	4,040	2,272	1,454	1,010	742	568	363	
<u>2"</u>	18,180	8,080	4,545	2,908	2,020	1,136	727	505	371	284	181	
<u>3"</u>	12,120	5,386	3,030	1,939	1,346	757	484	336	247	189	121	
<u>4"</u>	9,090	4,040	2,272	1,454	1,010	568	363	252	185	142	90	
<u>5"</u>	7,272	3,232	1,818	1,163	808	454	290	202	148	113	72	
<u>6"</u>	6,060	2,693	1,515	969	673	378	242	168	123	94	60	
<u>7"</u>	5,194	2,308	1,298	831	577	324	207	144	106	81	51	
<u>8"</u>	4,545	2,020	1,136	727	505	284	181	126	92	71	45	
<u>9"</u>	4,040	1,795	1,010	646	448	252	161	112	82	63	40	
<u>10"</u>	3,636	1,616	909	581	404	227	145	101	74	56	36	
<u>11"</u>	3,305	1,469	826	528	367	206	132	91	67	51	33	
<u>12"</u>	3,030	1,346	757	484	336	189	121	84	61	47	30	
<u>13"</u>	2,796	1,243	699	447	310	174	111	77	57	43	27	
<u>14"</u>	2,597	1,154	649	415	288	162	103	72	53	40	25	
<u>15"</u>	2,424	1,077	606	387	269	151	96	67	49	37	24	

\*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.