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™ 12 Gallon Dual-Battery Wet/Dry Vacuum Kit (0930-22) 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 minutes	N/A	< 2.5 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™ 12 Gallon Dual-Battery Wet/Dry Vacuum Kit (0930-22) 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 tank were used for each trial.
- The vacuum was turned to high speed.
- There was no knockout of the filter or cleaning of the vacuum tank during the trial.
- 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 at an 8” hole depth 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™ 12 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	1/4"	3/8”	1/2"	5/8”	3/4"	7/8”	1”	1-1/4”	1-1/2”	1-3/4”	2”	2-1/2”
1”	36,000	16,000	9,000	5,760	4,000	2,938	2,250	1,440	1,000	734	562	360
2”	18,000	8,000	4,500	2,880	2,000	1,469	1,125	720	500	367	281	180
3”	12,000	5,333	3,000	1,920	1,333	979	750	480	333	244	187	120
4”	9,000	4,000	2,250	1,440	1,000	734	562	360	250	183	140	90
5”	7,200	3,200	1,800	1,152	800	587	450	288	200	146	112	72
6”	6,000	2,666	1,500	960	666	489	375	240	166	122	93	60
7”	5,142	2,285	1,285	822	571	419	321	205	142	104	80	51
8”	4,500	2,000	1,125	720	500	367	281	180	125	91	70	45
9”	4,000	1,777	1,000	640	444	326	250	160	111	81	62	40
10”	3,600	1,600	900	576	400	293	225	144	100	73	56	36
11”	3,272	1,454	818	523	363	267	204	130	90	66	51	32
12”	3,000	1,333	750	480	333	244	187	120	83	61	46	30
13”	2,769	1,230	692	443	307	226	173	110	76	56	43	27
14”	2,571	1,142	642	411	285	209	160	102	71	52	40	25
15”	2,400	1,066	600	384	266	195	150	96	66	48	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. For technical or service assistance, contact Milwaukee Customer Service at 1-800-729-3878.