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" 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	< 2.5 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" 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™ 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	7/16	1/2	9/16	5/8	3/4	7/8	1	1-1/8	1-3/8
1	4,897	3,750	2,962	2,400	1,666	1,224	937	740	495
1.5	3,265	2,500	1,975	1,600	1,111	816	625	493	330
2	2,448	1,875	1,481	1,200	833	612	468	370	247
2.5	1,959	1,500	1,185	960	666	489	375	296	198
3	1,632	1,250	987	800	555	408	312	246	165
3.5	1,399	1,071	846	685	476	349	267	211	141
4	1,224	937	740	600	416	306	234	185	123
5	979	750	592	480	333	244	187	148	99
6	816	625	493	400	277	204	156	123	82
7	699	535	423	342	238	174	133	105	70
8	612	468	370	300	208	153	117	92	61
9	544	416	329	266	185	136	104	82	55
10	489	375	296	240	166	122	93	74	49

*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.