




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™ 3-in-1 Backpack Vacuum (0885-20) paired with the M18™ FUEL™ 1-9/16” SDS Max Rotary Hammer Drill (2717-20) and 1-3/8” X 35” SDS Max Vacuum Drill Bit (48-20-2712). 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 Holes Drilled	Average Sample Duration	% Silica (Quartz) in Sample	Average Respirable Crystalline Silica Concentration (µg/m³)	OSHA PEL in 1926.1153
	8	60.6	13.6	5.3 µg/m³ TWA	50 µg/m³

- All drilling was performed using a Milwaukee M18™ FUEL™ 3-in-1 Backpack Vacuum paired with the M18™ FUEL™ 1-9/16” SDS Max Rotary Hammer Drill (2771-20) and 1-3/8” X 35” SDS Max Vacuum Drill Bit (48-20-2712)
- The drilling was completed horizontally to mounted concrete and drilled through the depth of a 6” block
- Vacuum was turned to mode 1
- HEPA filter was cleaned every 2 holes with the following method
 - User removed canister from unit and took off the cap that sits above the HEPA filter. The cap was used to clean the filter by tapping downward aggressively 4 times on top of the filter while it was still in the canister. The canister was then emptied into a garbage can at foot level.
- Concrete blocks were poured from a 5000 PSI concrete mix.
- The room size was 12’9” x 26’5” x 8’
- The room surfaces were wiped down between trials to ensure accurate measurements
- 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 Gilian 10i air sampling pump. 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 minute (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 flat the grinder is held, the condition of the shroud brush, the silica content of the concrete, how much grinding was done when the shroud is not on a full, flat surface, 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 and how the vacuum is cleaned could affect actual user exposures.

*A 1-3/8" vacuum drill bit reflects the highest dust generating application, suggesting that other bit sizes would also be compliant when using the Milwaukee M18™ FUEL™ 3-in-1 Backpack Vacuum

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

Maximum Numbers 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"	3,793	2,904	2,295	1,859	1,291	948	726	574	384
1.5"	2,529	1,936	1,530	1,239	860	632	484	382	256
2"	1,896	1,452	1,147	929	645	474	363	287	192
2.5"	1,517	1,162	918	743	516	379	290	229	154
3"	1,264	968	765	620	430	316	242	191	128
3.5"	1,084	830	656	531	369	271	207	164	110
4"	948	726	574	465	323	237	182	143	96
5"	759	581	459	372	258	190	145	115	77
6"	632	484	382	310	215	158	121	96	64

* These calculations are offered for reference and are calculated values based on previously recorded test data and represent a full work day 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.