MILWAUKEE TOOL

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9/22/2022

29 CFR 1926.1153

Milwaukee® OSHA® Compliance Solutions

To Whom It May Concern,

Milwaukee®, in partnership with the Industrial Hygiene Sciences, LLC, has conducted testing on the Milwaukee SDS Plus HAMMERVAC™ Dedicated Dust Extractors. Results show that the 2916-DE M18 FUEL™ HAMMERVAC™ 1-1/4" Dedicated Dust Extractors are below the Permissible Exposure Limit (PEL) as described by OSHA 29 CFR 1926.1153 assuming they are used in accordance with manufacturer's instructions Testing results and procedures are outlined below:

Unit Tested	Average Holes Drilled	Average Sample Duration (Minutes)	Averate % Silica (Quartz) in Sample	Average Respirable Cyrstalline Silica Concentration (µg/m^3)	OSHA PEL in 2912.1153
2916-DE 	55	60	6.93%	3.33 µg/m^3 TWA	50 µg/m^3 over an 15 hour period

- All drilling was performed downward using a Milwaukee Rotary Hammer and a Milwaukee HAMMERVAC™ Dedicated Dust Extractor.
- The hole size was 3/4" in diameter and 4" deep.*
- Test procedure included both the drilling of holes and a method of emptying the dust box:
  - The dust box on the extractor was emptied every 10 holes
  - The dust box and filter were emptied by being connected to a dust extraction system
- Concrete blocks were poured from a 5000 PSI concrete mix.
- The room size 10ft x 16ft x 16ft
- The room surfaces were wiped down between trials to ensure accurate measurements
- 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 the those collected in these trials, would likely result in higher TWAs. Factors that would affect actual user exposures include, but are not limited to, the ventilation and air flow patterns in the work space, the presence of other respirable silica dust generating activities in the area, the frequency of and method used to empty the extractor, and the number and depth of the holes drilled.

*A 3/4" drill bit reflects the highest dust generating application, suggesting that other bit sizes would also be compliant when using the Milwaukee 2916-DE M18 FUEL™ HAMMERVAC™ 1-1/4" Dedicated Dust Extractor.

- Details on how to properly implement the 2916-DE as part of a completed exposure plan are outlined below.

Maximum Number of Holes per Day**

Hole Depth \ Hole Diameter	3/16”	¼”	3/8”	½”	5/8”	¾”	7/8”	1”	1-1/4”
1”	41,250	23,203	10,313	5,801	3,713	2,578	1,894	1,450	1,146
1-1/2”	27,500	15,469	6,875	3,867	2,475	1,719	1,263	967	764
2”	20,625	11,602	5,156	2,900	1,856	1,289	947	725	573
2-1/2”	16,500	9,281	4,125	2,320	1,485	1,031	758	580	458
3”	13,750	7,734	3,438	1,934	1,238	859	631	483	382
3-1/2”	11,786	6,629	2,946	1,657	1,061	737	541	414	327
4”	10,313	5,801	2,578	1,450	928	645	474	363	286
4-1/2”	9,167	5,156	2,292	1,289	825	573	421	322	255
5”	8,250	4,641	2,063	1,160	743	516	379	290	229
5-1/2”	7,500	4,219	1,875	1,055	675	469	344	264	208
6”	6,875	3,867	1,719	967	619	430	316	242	191
6-1/2”	6,346	3,570	1,587	892	571	397	291	223	176
7”	5,893	3,315	1,473	829	530	368	271	207	164
7-1/2”	5,500	3,094	1,375	773	495	344	253	193	153
8”	5,156	2,900	1,289	725	464	322	237	181	143

Frequency of Need to Empty Dust Box***

Hole Depth \ Hole Diameter	3/16”	¼”	3/8”	½”	5/8”	¾”	7/8”	1”	1-1/4”
1”	640	360	160	90	58	40	29	23	18
1-1/2”	427	240	107	60	38	27	20	15	12
2”	320	180	80	45	29	20	15	11	9
2-1/2”	256	144	64	36	23	16	12	9	7
3”	213	120	53	30	19	13	10	8	6
3-1/2”	183	103	46	26	16	11	8	6	5
4”	160	90	40	23	14	10	7	6	4
4-1/2”	142	80	36	20	13	9	7	5	4
5”	128	72	32	18	12	8	6	5	4
5-1/2”	116	65	29	16	10	7	5	4	3
6”	107	60	27	15	10	7	5	4	3
6-1/2”	98	55	25	14	9	6	5	3	3
7”	91	51	23	13	8	6	4	3	3
7-1/2”	85	48	21	12	8	5	4	3	2
8”	80	45	20	11	7	5	4	3	2

It is the responsibility of the user to operate the tool in accordance with manufacturer’s instruction. For the latest listings of approvals, visit milwaukeetool.com. For technical or service assistance, contact Milwaukee Customer Service at 1-800-729-3878.

* These calculations are offered for reference and are calculated values based on previously recorded test data.
** 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.
*** The dust box needs to be emptied out at or before the numbers specified above in order to be considered compliant with the objective data clause of 29 CFR 1926.1153 OSHA regulation on crystalline silica dust.