MILWAUKEE TOOL

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8/7/2017

29 CFR 1926.1153

Milwaukee® OSHA® Compliance Solutions

To Whom It May Concern,

Milwaukee®, in partnership with Industrial Hygiene Sciences, LLC, has conducted testing on the Milwaukee SDS Plus M12™ HAMMERVAC™ Universal Dust Extractor. Results show that the 2306-20/22 SDS Plus M12™ HAMMERVAC™ Universal Dust Extractor is below the Permissible Exposure Limit (PEL) as described by OSHA 29 CFR 1926.1153 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 (Minutes)	Average % Silica (Quartz) in Sample	Average Respirable Crystalline Silica Concentration (µg/m3)	OSHA PEL in 1926.1153
2306-20/22 	55	62.5	8.6	33.5 µg/m³ TWA	50 µg/m3 over an 8 hour period

- All drilling was performed overhead using a Milwaukee 2713-22 M18™ FUEL™ 1" SDS Plus D-Handle Rotary Hammer* and a Milwaukee 2306-22 M12™ HAMMERVAC™ Universal Dust Extractor.
- The hole size was 5/8" 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 and the HEPA filter was knocked out every 2 holes.
    - The dust box and filter were knocked out lightly into a bucket placed on the ground next to the drilling location.
- 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 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 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

**A 5/8" drill bit reflects the highest dust generating application, suggesting that other bit sizes would also be compliant when using the Milwaukee 2306-20/22 M12™ HAMMERVAC™ Universal Dust Extractor

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.

- Details on how to properly implement the 2306-20/22 as a part of a complete exposure plan are outlined below*:

Maximum Number of Holes per Day**

Hole Depth \ Hole Diameter	3/16"	1/4"	3/8"	1/2"	5/8"
1"	3,022	1,700	756	425	272
1-1/2"	2,015	1,113	504	283	181
2"	1,511	850	378	213	136
2-1/2"	1,209	680	302	170	109
3"	1,007	567	252	142	91
3-1/2"	863	486	216	121	78
4"	756	425	189	106	68

Frequency of Need to Empty Dust Box***

Hole Depth \ Hole Diameter	3/16"	1/4"	3/8"	1/2"	5/8"
1"	89	50	22	13	8
1-1/2"	59	33	15	8	5
2"	44	25	11	6	4
2-1/2"	36	20	9	5	3
3"	30	17	7	4	3
3-1/2"	25	14	6	4	2
4"	22	13	6	3	2

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.

* 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.