



OSHA Silica Rule Compliance Instructions

D1900 1-3/8" BitBuddie,

Website: www.dustlesstools.com

Phone: (800) 568-3949

- Compliant with Table 1, Section (vii) when using handheld or stand-mounted drills (including impact and rotary hammer drills). Manufacturer recommends a minimum airflow of 119 CFM. Use a Dustless HEPA Backpack, HEPA Wet+Dry, Wet+Dry, DustDroid 300, or DustDroid 600 to collect dust. A HEPA vacuum is required to clean out drill holes.
- If large chunks begin to block the dust collection slots, causing dust to build up around the bit, periodically lift the BitBuddie to allow the dust collector to vacuum it up.
- When removing the core from core bits, use the vacuum hose placed below to collect dust as it falls out of the bit.
- Compliant with Table 1, Section (vi) Rig-mounted core saws or drills when used with an integrated water delivery system. Use a Dustless Wet+Dry, HEPA Wet+Dry vacuum or Slurry Vac to collect slurry.
- Compliant with Paragraph d, (2), (ii) Alternative Exposure Control Methods when used with objective data when core drilling without water delivery. Objective data is included below.

Task	Table 1 Compliant?	Objective Data Required?	Objective Data Available	Minimum CFM required	Recommended Dust Collector	Notes
Hammer drilling with a masonry bit	Yes	No	N/A	119	Wet+Dry, HEPA Wet+Dry, HEPA Backpack	If dust starts to collect around bit, slightly lift the BitBuddie to allow vacuum to collect larger chunks blocking air slots.
Wet core drilling with a hammer drill or angle grinder	Yes	No	N/A	125	Wet+Dry, HEPA Wet+Dry, Slurry Vac	If slurry starts to collect around bit or flow around shroud, slightly lift the BitBuddie to allow vacuum to collect larger chunks blocking air slots.
Dry core drilling with a handheld drill or angle grinder	No	Yes	See Below	119	Wet+Dry, HEPA Wet+Dry, HEPA Backpack, DustDroid 300, DustDroid 600	If dust starts to collect around bit, slightly lift the BitBuddie to allow vacuum to collect larger chunks blocking air slots.

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Objective Data for D1900 1-3/8" BitBuddie, 1.3" Bit Dry Coring

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Description of calculations: An IQ Air Particle Scan Pro was used while coring concrete with a 1.3-inch coring bit. Readings for coring are shown in the following two tables. The operator was coring for the entire time monitored except for time required to clean out bit and reposition the shroud, therefore readings would be the approximately same for a TWA if the operator cored non-stop the entire day with the exception of a gradual buildup of dust in the air, which nevertheless would not cause the 8-hour TWA to exceed the PEL.

The Particle Scan Pro readings indicate how many particles of each size were detected over the indicated time periods, therefore, to isolate the sizes and convert the particles to micrograms, the next smaller size range was subtracted from the previous larger one, leaving the approximate number of particles that size or smaller. This number was then multiplied by the micron size number and the value of an average weight for a micron of concrete dust.

This result was then multiplied by 9.3% which was the silica content determined by laboratory analysis of a sample of the concrete used, which was conducted by Terracon Consulting during separate product testing. The resulting number is the amount of silica per cubic meter of air.

The final calculation indicates the minimum Assigned Protection Factor (APF). This was calculated by dividing the concentration of silica by the PEL as explained in OSHA 3352-02 2009.

Description of testing conditions:

Method of coring: dry

Total time assessed: 59:47 minutes

Grinder: Milwaukee 6088-30 6-inch angle grinder

Bit: 1.3-inch coring bit

Shroud: 1-3/8-inch Dustless Technologies BitBUddie (D1900).

Vacuum: Dustless Wet+Dry 16-gallon shop vacuum rated at 130 CFM.

Particle Counter: IQ Air Particle Scan Pro. Placed even with the operator's head, in the Personal Breathing Zone (PBZ)

Room specifications: 21-ft x 21.3-ft x 10-ft room without windows and with doors closed. Room is not serviced by forced air circulation systems. Air filtration installed in the room was turned off. Both doors into the room were closed.

Material cored: 2-ft x 2-ft x 4-inch concrete slab laboratory tested at 9.3% silica content. Operator drilled 14 holes.

Depth of core: 3 inches

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Measurements per cubic foot of air									
	Timestamp	>0.3	>0.5	>0.7	>1.0	>3.0	>5.0	Model	Unit
Coring	13:44:18 thru 14:44:05	2,904,546.7	629,681.3	400,174.0	155,979.3	49,332.0	2,090.7	IQ Air Pro	per ft3
Amount <each size		2,274,865.3	229,507.3	244,194.7	106,647.3	47,241.3	2,090.7	IQ Air Pro	per ft3
Micrograms of dust		283.5	47.7	71.0	44.3	58.9	4.3	IQ Air Pro	per ft3

Measurements per cubic meter of air									
	Timestamp								
Coring	13:44:18 thru 14:44:05	82,247.5	17,830.6	11,331.6	4,416.8	1,396.9	59.2	IQ Air Pro	Per m3
Amount <each size		64,416.9	6,498.9	6,914.8	3,019.9	1,337.7	59.2	IQ Air Pro	Per m3
Micrograms of dust		8.0	1.4	2.0	1.3	1.7	0.2	IQ Air Pro	Per m3
Amount of silica		0.7	0.1	0.2	0.1	0.2	0.0	IQ Air Pro	Per m3
APF		0.0	0.0	0.0	0.0	0.0	0.0		

Variables for calculation				
Silica PEL	5.00E+01	micrograms	per cubic meter	
	1.00E+09	cubic microns	per cubic mm	
	2.41E-06	kg	of concrete per cubic mm	
	1.00E-09	kg	per microgram	
A micron of concrete weighs	4.15E-04	micrograms		
Cubic foot is	2.83E-02	Cubic meters		
% silica in concrete	9.30%			

Analysis Summary		
Total µG of silica	1.35	<50µG PEL <25µG Action level
Max APF required	0.03	No APF Req'd

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