DUST REMOVAL SYSTEM SUBMITTALS

Interior Finisher

- Self-contained drilling systems (TE 4A/6A DRS + DRS-M)
- Rotary hammers with DRS-S
- Combihammers with DRS-Y
- Hollow drill bits
- Breakers with DRS-B and DRS-3000
- Grinding concrete with angle grinders
- Vacuums
Handheld and stand-mounted drills (including impact and rotary hammer drills)

Current Hilti self-contained dust collection systems:
- DRS 4-A
- DRS 6-A
- DRS-M

For instructions on how to assemble these systems, please refer to the Hilti North America Youtube page
TABLE 1 REQUIREMENTS

These systems fall under table 1, section vii: handheld and stand-mounted drills (including impact and rotary hammer drills). In order to be table 1 compliant, the below requirements must be met:

- Use drill equipped with commercially available shroud or cowling with dust collection system
- Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions
- Dust collector must provide the air flow recommended by the tool manufacturer, or greater
- Have a filter with 99% or greater efficiency and a filter-cleaning mechanism

Note: Vacuum must be equipped with a HEPA-filter when cleaning holes

Table 1 states that no respirator is required if the above controls are fully and properly implemented.

<table>
<thead>
<tr>
<th>Equipment / Task</th>
<th>Engineering and work practice control methods</th>
<th>Required respiratory protections and minimum Assigned Protection Factor (APF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handheld and stand-mounted drills (including impact and rotary hammer drills)</td>
<td>Use drill equipped with commercially available shroud or cowling with dust collection system. Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.</td>
<td>≤ 4 hours / shift</td>
</tr>
<tr>
<td></td>
<td>• When used outdoors</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>• When used indoors or in an enclosed area</td>
<td>None</td>
</tr>
</tbody>
</table>

Check below to see how your system can be compliant with 1926.1153. To verify the generation of your tool, check the rating plate, or call Hilti at 800-879-8000 with your serial number.

<table>
<thead>
<tr>
<th>DRS module name</th>
<th>Tool name and generation</th>
<th>DRS system item number</th>
<th>Method of compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRS 4-A</td>
<td>TE 4-A gen 1</td>
<td>n/a</td>
<td>Exposure assessment</td>
</tr>
<tr>
<td></td>
<td>TE 4-A gen 2</td>
<td>2098490**</td>
<td>Objective data*</td>
</tr>
<tr>
<td></td>
<td>TE 6-A gen 1</td>
<td>2177080</td>
<td>Objective data* / Table 1</td>
</tr>
<tr>
<td></td>
<td>TE 6-A gen 2</td>
<td>n/a</td>
<td>Exposure assessment</td>
</tr>
<tr>
<td></td>
<td>TE 6-A gen 3</td>
<td>2040914</td>
<td>Objective data</td>
</tr>
<tr>
<td></td>
<td>TE 6-A gen 4</td>
<td>2172902</td>
<td>Objective data* / Table 1</td>
</tr>
<tr>
<td></td>
<td>TE 6 / 6-S / 7 / 7-C / TE 7-A</td>
<td>2098511**</td>
<td>Objective data*</td>
</tr>
<tr>
<td>DRS 6-A</td>
<td>TE 6-A gen 3</td>
<td>2040914</td>
<td>Objective data</td>
</tr>
<tr>
<td></td>
<td>TE 6-A gen 4</td>
<td>2172902</td>
<td>Objective data* / Table 1</td>
</tr>
<tr>
<td></td>
<td>TE 6 / 6-S / 7 / 7-C / TE 7-A</td>
<td>2098511**</td>
<td>Objective data*</td>
</tr>
</tbody>
</table>

*See Hilti’s published Objective Data — if not applicable to a specific application, exposure assessment is required.

**Can be upgraded to table 1 compliance through purchase of the compliant filter box
SYSTEM OVERVIEW

Self-contained dust-collection systems are systems that fit on the tool and do not require a separate stand-alone vacuum to collect dust. Hilti currently offers the below systems with this configuration:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Accessory</th>
<th>Vacuum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotary hammer TE 4-A 18 or TE 4-A 22</td>
<td>Dust removal system TE DRS 4-A</td>
<td></td>
</tr>
<tr>
<td>Rotary hammer TE 6-A 36</td>
<td>Dust removal system TE DRS 6-A</td>
<td></td>
</tr>
<tr>
<td>Rotary hammer TE 7 or TE 7-C</td>
<td>Dust removal system TE DRS-M</td>
<td></td>
</tr>
</tbody>
</table>

Note: previous generations of tools may have different item numbers or nomenclature. Check with your local Hilti representative or product instruction manual to verify.
OSHA 29 CFR §1926.1153
RESPIRABLE SILICA DUST EXPOSURE

Hilti TE 4-A/6-A with on-board dust removal system (DRS)

Hilti has performed testing of the above system to determine the operator’s respirable silica dust exposure in accordance with EN 50632-1 and EN 50632-2-6. Testing was performed under the following conditions:

- Room size: 7.8m x 7.8m x 3.3m Closed — no air exchange
- Drilled hole dimensions: ø5/8” x 2”
- Test duration: 1 hour
- Total holes drilled: 75
- Drilling orientation: overhead
- Base material: concrete
- Sampler: 10 l/min GSP pump, FSP sampler, ISO 7708-compliant, 5 μm filter
- Air sample volume collected during test: 600 liters
- Dust collection receptacle on tool emptied every 8 holes drilled

DRS module items 2098490 (TE 4A gen 2) and 2172902 (TE 6A gen 4) only

Results:

<table>
<thead>
<tr>
<th>Time-Weighted Average Respirable Silica Dust Exposure</th>
<th>45 μg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 μg/m³</td>
<td>45 μg/m³</td>
</tr>
</tbody>
</table>

1 Exception: EN 50632-2-6 specifies drilling one hundred twenty ø16mm x 50mm holes at a 15° downward-from-horizontal position.
2 The silica content of base materials varies. As a result, the silica content in respirable dust samples also varies. The above-published exposure value is based on a 20% silica content applied to the total respirable dust measurement. Measured average silica content during testing was 13.8%.
3 Exposure value represents the time-weighted average (TWA) over the 1-hour test period. Due to the test being conducted in a closed, non-ventilated room, this TWA exposure value would increase if the test duration was extended under the same conditions.
4 These test results can be applied for modules used with previous generations of tools.
HOW TO UTILIZE HILTI “OBJECTIVE DATA”

29 CFR §1926.1153(d)(2)(ii)

Performance option

Hilti has conducted testing to establish the respirable silica dust exposure (exposure level), associated with the use of various Hilti tool systems. These tests were performed in accordance with EN 50632, except the specific work configuration may vary to provide more versatile data and better address U.S. practices. The purpose of the testing was to generate “Objective Data” to be used as part of the exposure assessment requirements of 29 CFR §1926.1153(d)(2)(ii).

Per the EN standard, testing was performed for 1 hour in a 200m³ closed, non-ventilated room. Under these conditions, exposure levels increase over time. The exposure values published in Hilti’s Objective Data represent the average over the 1-hour test period (1-hour TWA). Meaning the TWA started at zero, rose to the published 1-hour value, and would continue to rise if the test were continued.

There are several underlying concepts important to applying the Objective Data to any case-specific assessment:

1. More/less work performed in a given time period will increase/decrease the exposure level.
2. Larger/smaller room size will decrease/increase the exposure level.
3. Air exchange decreases exposure levels. Specifically, a 100% air-exchange every hour (either by the work moving to a discrete area, or via sufficient air movement), means Hilti’s published 1-hour TWA exposure level is expected to conservatively represent a steady-state TWA. The conceptual basis is two-fold: air exchange would inherently reduce the published “closed room” exposure value. And sufficient air exchange to “reset” the environment every hour would keep the exposure values at that level. For reference, a typical 20”, 2500 CFM box fan would introduce 100% new air volume in Hilti’s test chamber (7,200 ft³), every 3 minutes.
4. The OSHA 50 μg/m³ Permissible Exposure Limit (PEL), is based on an 8-hour TWA. This means the exposure level as an 8-hour TWA is ≤50 μg/m³; a 4-hour TWA is ≤100 μg/m³ (assuming no exposure for the remainder of the shift); a 2-hour TWA is ≤200 μg/m³ (assuming no exposure for the remainder of the shift) etc. (time [hours] x exposure level [μg/m³] ≤ 400).

Hilti’s published Objective Data states the amount of work performed during the 1-hour test (“1-hour work”). Therefore, the respirable silica dust exposure level in any case-specific situation is expected to be below the 8-hour TWA PEL in the following conditions:

- An employee performing ≤ “1-hour work” during a shift.
- An employee performing ≤ “1-hour work” in an hour, then moving to another discrete area and performing ≤ “1-hour work” in an hour, etc., throughout an entire shift.
- An employee performing ≤ “1-hour work” each hour, in an environment with sufficient air exchange to prevent accumulation of airborne dust.

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1 Hilti’s published Objective Data incorporates a silica content of 20% of the total respirable dust measurement. Site-specific silica content varies. OSHA Docket No. OSHA-2010-0034, reviewed 588 respirable dust samples from construction tasks, finding the silica content varied from <1%-50%, with an average of 9.1%.
2 Note introduction/exhaust of 100% air volume does not necessarily correlate to a 100% air exchange.
3 As long as: (1) Hilti’s published Objective Data exposure level is ≤50 μg/m³; (2) work is performed in a room with volume ≥200m³, and/or having adequate ventilation; and (3) site-specific respirable silica content is ≤20% of total respirable dust.
HOW TO USE THE TABLE 1 SOLUTION

Cordless rotary hammer

TE DRS OSHA

Hilti developed TE DRS dust collection system with a filter cleaning mechanism and 99% filter efficiency, compliant with OSHA 1926.1153, Table 1. The TE DRS-4-A dust box is compatible with the TE DRS-4-A and TE DRS-4-A (T1) only. The TE DRS-6-A dust box is compatible with the TE DRS-6-A and TE DRS-6-A (T1) only.

Set-up

1. Empty the TE DRS dust box, and clean and inspect the filter.
2. Attach the TE DRS module to the rotary hammer.
3. Start TE DRS vacuum by pressing tool’s control switch.
4. Verify proper operation of the TE DRS vacuum, including suction at the extraction head.
   - Check for damage or leaks in the dust box, hose, and extraction head.
   - Make sure the hose extends/retracts freely.

Drilling

1. Start drilling, and allow the TE DRS to reach full speed before beginning to drill.
   - Hold the rotary hammer perpendicular to the work surface and keep the extraction head in contact with the work surface.
2. To maximize dust collection, after the hole is drilled, slowly withdraw bit from the hole, and keep the rotary hammer running until the bit is fully withdrawn.

Cleaning and maintenance

- Empty the dust box after every 5 in³ of hole drilling (e.g. after 8-10 holes 5/8 in x 2 in (16 mm x 50 mm)).
- After every 3 in³ of hole drilling (e.g. after 5 holes ø 1/2 in depth 3 in (ø12 mm x 76 mm)) or if suction performance decreases push the button of the cleaning mechanism 5 times in each direction.
- To minimize dust emission, either use a vacuum to clean the dust box or place the dust box in a plastic bag keeping it closed as much as possible.
- Replace the filter if the dust debris cannot be removed, or if there are any tears or leaks in the filter.
- If more-than-usual dust is emitted during drilling, inspect the TE DRS system, and clean/inspect the dust box and filter.
HILTI SUBMITTAL PACKAGE
OSHA 1926.1153 TABLE 1, SECTION vii

Section vii: Handheld and stand-mounted drills (including impact and rotary hammer drills)

Current Hilti rotary hammers that use a DRS-S shroud:
TE 2 (and 2-S)
TE 3-C
TE 7
TE 4-A 22
TE 6-A 36
TE 7-C
TE 30 (and 30-C)
TE 40-AVR
TE 50-AVR
TE 60-AVR
TE 60-ATC/AVR
TE 70-AVR
TE 70-ATC/AVR
TE 80-ATC/AVR

For instructions on how to assemble these systems, please refer to the Hilti North America Youtube page

DRS-S
TABLE 1 REQUIREMENTS

These systems fall under table 1, section vii: handheld and stand-mounted drills (including impact and rotary hammer drills). In order to be table 1 compliant, the below requirements must be met:

- Use drill equipped with commercially available shroud or cowling with dust collection system
- Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions
- Dust collector must provide the air flow recommended by the tool manufacturer, or greater
- Have a filter with 99% or greater efficiency and a filter-cleaning mechanism

Note: Vacuum must be equipped with a HEPA-filter when cleaning holes

Table 1 states that no respirator is required if the above controls are fully and properly implemented.

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<td>≤ 4 hours / shift</td>
</tr>
<tr>
<td></td>
<td>• When used outdoors</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>• When used indoors or in an enclosed area</td>
<td>None</td>
</tr>
</tbody>
</table>

Check below to see how your system can be compliant with 1926.1153 Table 1. To verify the generation of your tool, check the rating plate, or call Hilti at 800-879-8000 with your serial number.

<table>
<thead>
<tr>
<th>DRS module name</th>
<th>Tool name and generation</th>
<th>Vacuums (can use any)</th>
<th>Method of compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 2 series</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 3-C series</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 7 series</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 4-A 22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 6-A 36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 30 series</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 30-A 36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 40-AVR</td>
<td>DRS-S (Item number 340602)</td>
<td>VC 125-6</td>
<td>All table 1 compliant</td>
</tr>
<tr>
<td>TE 30 series</td>
<td></td>
<td>VC 125-9</td>
<td></td>
</tr>
<tr>
<td>TE 40-AVR</td>
<td></td>
<td>VC 20-U</td>
<td></td>
</tr>
<tr>
<td>TE 60 series</td>
<td></td>
<td>VC 40-U</td>
<td></td>
</tr>
<tr>
<td>TE 70 series</td>
<td></td>
<td>VC 40-UE</td>
<td></td>
</tr>
<tr>
<td>TE 80-ATC/AVR</td>
<td>DRS-S required</td>
<td>VC 150-6 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-10 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-6 XE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 300-17 X</td>
<td></td>
</tr>
</tbody>
</table>

*The correct depth gauge will depend on your model of tool. For questions, check your instruction manual or call Hilti at 800-879-8000.
SYSTEM OVERVIEW

Hilti rotary hammers with a DRS-S are table 1 compliant through use of a dust collection shroud hooked up to a vacuum that meets table 1 requirements. This shroud attaches to the depth gauge on the tool, and must be purchased separately for tools with an SDS-max connection. Any Hilti rotary hammer with a depth gauge will be table 1 compliant with the DRS-S if a Hilti vacuum is used. Hilti currently offers the below systems with this configuration:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Accessory</th>
<th>Vacuum (use any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 2 and TE 2-S</td>
<td></td>
<td>VC 125-6</td>
</tr>
<tr>
<td>TE 3-C</td>
<td></td>
<td>VC 125-9</td>
</tr>
<tr>
<td>TE 7 and TE 7-C</td>
<td></td>
<td>VC 20-U</td>
</tr>
<tr>
<td>TE 4-A 22</td>
<td></td>
<td>VC 150-6 X</td>
</tr>
<tr>
<td>TE 6-A 36</td>
<td></td>
<td>VC 150-6 XE</td>
</tr>
<tr>
<td>TE 7-A</td>
<td></td>
<td>VC 40-U</td>
</tr>
<tr>
<td>TE 30 and TE 30-C</td>
<td></td>
<td>VC 150-10 X</td>
</tr>
<tr>
<td>TE 30-A 36</td>
<td></td>
<td>VC 40-UE</td>
</tr>
<tr>
<td>TE 40-AVR</td>
<td></td>
<td>VC 150-10 XE</td>
</tr>
</tbody>
</table>

Note: previous generations of tools may have different item numbers or nomenclature. Check with your local Hilti representative or product instruction manual to verify.
<table>
<thead>
<tr>
<th>Tool</th>
<th>Accessory</th>
<th>Vacuum (use any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 50-AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 60-AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 60-ATC/AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 70-AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 70-ATC/AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 80-ATC/AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Depth gauge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(sold separately)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DRS-S</td>
<td></td>
</tr>
</tbody>
</table>

Note: previous generations of tools may have different item numbers or nomenclature. Check with your local Hilti representative or product instruction manual to verify.
TE Dust Control — OSHA

Hilti developed drilling dust collection systems with a shroud, to be attached to a Hilti vacuum with a filter cleaning mechanism and 99% filter efficiency, compliant with OSHA 1926.1153, Table 1.

Set-up

1. Attach the appropriate dust collection shroud to the drill.
2. Insert the bit. Rotate the bit in the chuck until you hear a clicking noise to verify that the bit is firmly inserted into the chuck.
3. Choose the correct collector based on the system and insert being used.
4. Set the proper depth using the depth gauge mechanism on the shroud. This will either be a depth gauge rod (DRS-Y, hollow drill bits) or a set of tabbed stops (DRS 4-A/6-A/M, DRS-S)
5. Verify that the bit is flush or below the surface of the dust collection device. Note that for the DRS-Y, with 24” bits, the bit will extend approximately 1” beyond the shroud.
6. Make sure that drilling shroud extends and retracts freely.
7. Start vacuum.
8. Verify proper operation of the dust collection system, including suction at the extraction head.
   • Check for damage or leaks in the vacuum, hose, and extraction head.
   • See instructions for vacuum.

Drilling

1. Start the vacuum before beginning to drill.
   • Hold the drill perpendicular to the work surface and keep the extraction head in contact with the work surface.
2. To maximize dust collection, after the hole is drilled, slowly withdraw bit from the hole, and keep the drill running until the bit is fully withdrawn.

Cleaning and maintenance

• See instructions for vacuum.
Section x: Jackhammers and handheld powered chipping tools

Section vii: Handheld and stand-mounted drills (including impact and rotary hammer drills)

Current Hilti SDS-max rotary hammers that use a DRS-Y shroud:
- TE 50-AVR
- TE 60-AVR
- TE 60-ATC/AVR
- TE 70-AVR
- TE 70-ATC/AVR
- TE 80-ATC/AVR

For instructions on how to assemble these systems, please refer to the Hilti North America Youtube page
TABLE 1 REQUIREMENTS

These systems fall under table 1, section x: jackhammers and handheld powered chipping tools and section vii: handheld and stand-mounted drills (including impact and rotary hammer drills). In order to be table 1 compliant, the below requirements must be met:

**Options for chiseling applications**

- Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.

**Options for drilling or chiseling applications**

- Use tool equipped with commercially available shroud or cowling with dust collection system.
- Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions.
- Dust collector must provide the air flow recommended by the tool manufacturer, or greater.
- Have a filter with 99% or greater efficiency and a filter-cleaning mechanism.

Note: Vacuum must be equipped with a HEPA-filter when cleaning holes.

Table 1 requires a respirator to be worn in certain environments based on the time of the application. Check below to see when an APF 10 respirator must be worn.

<table>
<thead>
<tr>
<th>Equipment / Task</th>
<th>Engineering and work practice control methods</th>
<th>Required respiratory protections and minimum Assigned Protection Factor (APF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handheld and stand-mounted drills</td>
<td>Use drill equipped with commercially available shroud or cowling with dust collection system. Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.</td>
<td>≤ 4 hours / shift: None, &gt; 4 hours / shift: None</td>
</tr>
<tr>
<td></td>
<td>• When used outdoors: None</td>
<td>&gt; 4 hours / shift: None</td>
</tr>
<tr>
<td></td>
<td>• When used indoors or in an enclosed area: None</td>
<td>&gt; 4 hours / shift: None</td>
</tr>
<tr>
<td>Jackhammers and handheld powered chipping tools</td>
<td>Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.</td>
<td>≤ 4 hours / shift: None, &gt; 4 hours / shift: APF 10</td>
</tr>
<tr>
<td></td>
<td>• When used outdoors: None</td>
<td>&gt; 4 hours / shift: APF 10</td>
</tr>
<tr>
<td></td>
<td>• When used indoors or in an enclosed area: APF 10</td>
<td>&gt; 4 hours / shift: APF 10</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
</tr>
</tbody>
</table>

Use tool equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.

- When used outdoors: None
- When used indoors or in an enclosed area: APF 10

OR

- When used outdoors: APF 10
- When used indoors or in an enclosed area: APF 10
Check below to see how your system can be compliant with 1926.1153 Table 1. To verify the generation of your tool, check the rating plate, or call Hilti at 800-879-8000 with your serial number. To check fit of the DRS-Y with older tool generations, check the sticker on the inside of the case on the DRS-Y, or refer to the instruction manual.

<table>
<thead>
<tr>
<th>Tool models*</th>
<th>Accessory</th>
<th>Vacuums (can use any)</th>
<th>Method of compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 50</td>
<td>DRS-Y</td>
<td>VC 125-6</td>
<td>All table 1 compliant</td>
</tr>
<tr>
<td>TE 50-AVR</td>
<td></td>
<td>VC 125-9</td>
<td></td>
</tr>
<tr>
<td>TE 60</td>
<td></td>
<td>VC 20-U</td>
<td></td>
</tr>
<tr>
<td>TE 60-AVR</td>
<td></td>
<td>VC 40-U</td>
<td></td>
</tr>
<tr>
<td>TE 60-ATC/AVR</td>
<td></td>
<td>VC 40-UE</td>
<td></td>
</tr>
<tr>
<td>TE 70-AVR</td>
<td></td>
<td>VC 150-6 X</td>
<td></td>
</tr>
<tr>
<td>TE 70-ATC/AVR</td>
<td></td>
<td>VC 150-10 X</td>
<td></td>
</tr>
<tr>
<td>TE 80-ATC/AVR</td>
<td></td>
<td>VC 150-8 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-10 XE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 300-17 X</td>
<td></td>
</tr>
</tbody>
</table>

**SYSTEM OVERVIEW**

Hilti SDS-max rotary hammers are table 1 compliant for both drilling and chiseling applications through use of a dust collection shroud hooked up to a vacuum that meets table 1 requirements. Hilti currently offers the below systems with this configuration:

![Tool models](image)

*Note: previous generations of tools may have different item numbers or nomenclature. Check with your local Hilti representative or product instruction manual to verify.*
TE Dust Control — OSHA

Hilti developed drilling dust collection systems with a shroud, to be attached to a Hilti vacuum with a filter cleaning mechanism and 99% filter efficiency, compliant with OSHA 1926.1153, Table 1.

Set-up

1. Attach the appropriate dust collection shroud to the drill.
2. Insert the bit. Rotate the bit in the chuck until you hear a clicking noise to verify that the bit is firmly inserted into the chuck.
3. Choose the correct collector based on the system and insert being used.
4. Set the proper depth using the depth gauge mechanism on the shroud. This will either be a depth gauge rod (DRS-Y, hollow drill bits) or a set of tabbed stops (DRS 4-A/6-A/M, DRS-S). A depth gauge is not needed on the DRS-Y when using the attachments for chiseling.
5. Verify that the bit is flush or below the surface of the dust collection device. Note that for the DRS-Y, with 24" bits, the bit will extend approximately 1” beyond the shroud. When chiseling with the DRS-Y, the chisel will extend beyond the head of the chiseling shroud to allow the insert to chisel.
6. When drilling, make sure that drilling shroud extends and retracts freely.
7. Start vacuum.
8. Verify proper operation of the dust collection system, including suction at the extraction head
   - Check for damage or leaks in the vacuum, hose, and extraction head.
   - See instructions for vacuum.

Drilling

1. Start the vacuum before beginning to drill.
   - Hold the drill perpendicular to the work surface and keep the extraction head in contact with the work surface.
2. To maximize dust collection, after the hole is drilled, slowly withdraw bit from the hole, and keep the drill running until the bit is fully withdrawn.

Cleaning and maintenance

- See instructions for vacuum.
HILTI SUBMITTAL PACKAGE
OSHA 1926.1153 TABLE 1, SECTION vii

Section vii: Handheld and stand-mounted drills (including impact and rotary hammer drills)

All Hilti hollow drill bits:
TE-CD (SDS+)
TE-YD (SDS-max)

For instructions on how to assemble these systems, please refer to the Hilti North America Youtube page
TABLE 1 REQUIREMENTS

These systems fall under table 1, section viii: handheld and stand-mounted drills (including impact and rotary hammer drills). In order to be table 1 compliant, the below requirements must be met:

- Use drill equipped with commercially available shroud or cowling with dust collection system
- Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions
- Dust collector must provide the air flow recommended by the tool manufacturer, or greater
- Have a filter with 99% or greater efficiency and a filter-cleaning mechanism

Note: Vacuum must be equipped with a HEPA-filter when cleaning holes. No HEPA filter needed when utilizing Hilti hollow drill bits within a Hilti SafeSet system

Table 1 states that no respirator is required if the above controls are fully and properly implemented.

<table>
<thead>
<tr>
<th>Equipment / Task</th>
<th>Engineering and work practice control methods</th>
<th>Required respiratory protections and minimum Assigned Protection Factor (APF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handheld and stand-mounted drills (including impact and rotary hammer drills)</td>
<td>Use drill equipped with commercially available shroud or cowling with dust collection system. Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.</td>
<td>≤ 4 hours / shift &gt; 4 hours / shift</td>
</tr>
<tr>
<td></td>
<td>• When used outdoors</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>• When used indoors or in an enclosed area</td>
<td>None</td>
</tr>
</tbody>
</table>

Check below to see how your system can be compliant with 1926.1153 Table 1.

<table>
<thead>
<tr>
<th>Tool models</th>
<th>Accessory</th>
<th>Vacuums (can use any)</th>
<th>Method of compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 2 series</td>
<td></td>
<td>VC 125-6</td>
<td>All table 1 compliant</td>
</tr>
<tr>
<td>TE 3-C series</td>
<td></td>
<td>VC 125-9</td>
<td></td>
</tr>
<tr>
<td>TE 7 series</td>
<td></td>
<td>VC 20-U</td>
<td></td>
</tr>
<tr>
<td>TE 4-A 22</td>
<td></td>
<td>VC 40-U</td>
<td></td>
</tr>
<tr>
<td>TE 6-A 36</td>
<td></td>
<td>VC 40-UE</td>
<td></td>
</tr>
<tr>
<td>TE 30 series</td>
<td></td>
<td>VC 150-6 X</td>
<td></td>
</tr>
<tr>
<td>TE 40-AVR</td>
<td></td>
<td>VC 150-10 X</td>
<td></td>
</tr>
<tr>
<td>TE 50-AVR</td>
<td></td>
<td>VC 150-6 XE</td>
<td></td>
</tr>
<tr>
<td>TE 60 series</td>
<td></td>
<td>VC 150-10 XE</td>
<td></td>
</tr>
<tr>
<td>TE 70 series</td>
<td></td>
<td>VC 300-17 X</td>
<td></td>
</tr>
<tr>
<td>TE 80-ATC/AVR</td>
<td></td>
<td>Any TE-YD drill bit</td>
<td></td>
</tr>
</tbody>
</table>
**SYSTEM OVERVIEW**

Hilti rotary hammers with a hollow drill bit are table 1 compliant through use of a hollowed out drill bit hooked up to a vacuum that meets table 1 requirements. Hilti currently offers the below systems with this configuration:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Accessory</th>
<th>Vacuum (use any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 2-A 18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 2 and TE 2-S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 3-C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 7 and TE 7-C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 4-A 22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 6-A 36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 7-A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 30 and TE 30-C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 30-A 36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 40-AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 125-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 125-9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 20-U</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 150-6 X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 150-6 XE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 40-U</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 150-10 X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 150-10 XE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 40-UE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 300-17 X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: previous generations of tools may have different item numbers or nomenclature. Check with your local Hilti representative or product instruction manual to verify.
<table>
<thead>
<tr>
<th>Tool</th>
<th>Accessory</th>
<th>Vacuum (use any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 50-AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 60-AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 60-ATC/AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 70-AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 70-ATC/AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 80-ATC/AVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE-YD hollow drill bits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC 125-6</td>
<td></td>
<td>VC 125-9</td>
</tr>
<tr>
<td>VC 20-U</td>
<td></td>
<td>VC 150-6 X</td>
</tr>
<tr>
<td>VC 150-6 XE</td>
<td></td>
<td>VC 40-U</td>
</tr>
<tr>
<td>VC 150-10 X</td>
<td></td>
<td>VC 40-UE</td>
</tr>
<tr>
<td>VC 150-10 XE</td>
<td></td>
<td>VC 300-17 X</td>
</tr>
</tbody>
</table>

Note: previous generations of tools may have different item numbers or nomenclature. Check with your local Hilti representative or product instruction manual to verify.
HILTI SUBMITTAL PACKAGE
OSHA 1926.1153 TABLE 1, SECTION x

Jackhammers and handheld powered chipping tools

Current Hilti breakers with dust control solutions:
- TE 500-AVR (DRS-B)
- TE 700-AVR (DRS-B)
- TE 800-AVR (DRS-B)
- TE 1000-AVR (DRS-B)
- TE 1500-AVR (DRS-B)
- TE 3000-AVR (DRS 3000)

For instructions on how to assemble these systems, please refer to the Hilti North America Youtube page
TABLE 1 REQUIREMENTS

These systems fall under table 1, section x: jackhammers and handheld powered chipping tools. In order to be table 1 compliant, the below requirements must be met:

- Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact
- Use tool equipped with commercially available shroud or cowling with dust collection system
- Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions
- Dust collector must provide the air flow recommended by the tool manufacturer, or greater
- Have a filter with 99% or greater efficiency and a filter-cleaning mechanism

Table 1 requires a respirator to be worn in certain environments based on the time of the application. Check below to see when an APF 10 respirator must be worn.

<table>
<thead>
<tr>
<th>Equipment / Task</th>
<th>Engineering and work practice control methods</th>
<th>Required respiratory protections and minimum Assigned Protection Factor (APF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(x) Jackhamers and handheld powered chipping tools</td>
<td>Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.</td>
<td>≤ 4 hours / shift</td>
</tr>
<tr>
<td></td>
<td>• When used outdoors</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>• When used indoors or in an enclosed area</td>
<td>APF 10</td>
</tr>
<tr>
<td>OR</td>
<td>Use tool equipped with commercially available shroud and dust collection system.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• When used outdoors</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>• When used indoors or in an enclosed area</td>
<td>APF 10</td>
</tr>
</tbody>
</table>

Check below to see how your system can be compliant with 1926.1153 Table 1. To verify the generation of your tool, check the rating plate, or call Hilti at 800-879-8000 with your serial number. To check fit of the DRS-B with older tool generations, check the sticker on the inside of the case on the DRS-B, or refer to the instruction manual.

<table>
<thead>
<tr>
<th>Tool models</th>
<th>Accessory</th>
<th>Vacuums (can use any)</th>
<th>Method of compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 50 / 56 / 60 / 70 / 76 / 80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE 505 / 500-AVR</td>
<td></td>
<td>VC 125-6</td>
<td></td>
</tr>
<tr>
<td>TE 706 / 700-AVR</td>
<td></td>
<td>VC 125-9</td>
<td></td>
</tr>
<tr>
<td>TE 805 / TE 800-AVR</td>
<td>DRS-B</td>
<td>VC 20-U</td>
<td></td>
</tr>
<tr>
<td>TE 905</td>
<td></td>
<td>VC 40-U</td>
<td></td>
</tr>
<tr>
<td>TE 1000-AVR</td>
<td></td>
<td>VC 40-UE</td>
<td></td>
</tr>
<tr>
<td>TE 1500-AVR</td>
<td></td>
<td>VC 150-6 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-6 XE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-10 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 300-17 X</td>
<td></td>
</tr>
</tbody>
</table>

Separate system

<table>
<thead>
<tr>
<th>TE 3000-AVR</th>
<th>DRS 3000</th>
<th>Item number 2171779</th>
</tr>
</thead>
</table>

All table 1 compliant
SYSTEM OVERVIEW

Hilti combihammers, hammers and breakers are table 1 compliant through use of a dust collection shroud hooked up to a vacuum that meets table 1 requirements. Hilti currently offers the below systems with this configuration:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Accessory</th>
<th>Vacuum (use any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 500-AVR</td>
<td></td>
<td>VC 125-6</td>
</tr>
<tr>
<td>TE 700-AVR</td>
<td></td>
<td>VC 125-9</td>
</tr>
<tr>
<td>TE 800-AVR</td>
<td>TE DRS-B</td>
<td>VC 20-U</td>
</tr>
<tr>
<td>TE 1000-AVR</td>
<td></td>
<td>VC 150-6 X</td>
</tr>
<tr>
<td>TE 1500-AVR</td>
<td></td>
<td>VC 150-6 XE</td>
</tr>
<tr>
<td>TE 3000-AVR</td>
<td>TE DRS 3000</td>
<td>VC 150-10 X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 40-U</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 40-UE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 300-17 X</td>
</tr>
</tbody>
</table>

Note: previous generations of tools may have different item numbers or nomenclature. Check with your local Hilti representative or product instruction manual to verify.
HILTI SUBMITTAL PACKAGE
OSHA 1926.1153 TABLE 1, 
SECTION xii

Sections xii: Handheld grinders for uses other than mortar removal

Current Hilti angle grinders with a Hilti grinding hood:
AG 450-7S
AG 450-7D
DEG 500
DAG 500-D
DCG 500-S
AG 500-11S
AG 500-12D
DG 150

For instructions on how to assemble these systems, please refer to the Hilti North America Youtube page

DG 150
Angle grinders with a grinding hood
TABLE 1 REQUIREMENTS

These systems fall under table 1, section xii: **handheld grinders for use other than mortar removal**. In order to be table 1 compliant, the below requirements must be met:

- When performing outdoor applications only: use a grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface

or

- Use tool equipped with commercially available shroud or cowling with dust collection system
- Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions
- Dust collector must provide the air flow recommended by the tool manufacturer, or greater
- Have a filter with 99% or greater efficiency and a filter-cleaning mechanism
- Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter

Table 1 requires a respirator to be worn in certain environments based on the time of the application. Check below to see when an APF 10 respirator must be worn.

<table>
<thead>
<tr>
<th>Equipment / Task</th>
<th>Engineering and work practice control methods</th>
<th>Required respiratory protections and minimum Assigned Protection Factor (APF)</th>
</tr>
</thead>
</table>
| (xii) Handheld grinders for uses other than mortar removal | For tasks performed outdoors only.  
Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface.  
Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions.  
OR  
Use grinder equipped with commercially available shroud and dust collection system.  
Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions.  
Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.  
• When used outdoors  
• When used indoors or in an enclosed area | ≤ 4 hours / shift | > 4 hours / shift |
|                  |                                               | None                                             | None |
|                  |                                               | None                                             | APF 10 |
Check below to see how your system can be compliant with 1926.1153 Table 1. To verify the generation of your tool, check the rating plate, or call Hilti at 800-879-8000 with your serial number.

<table>
<thead>
<tr>
<th>Tool models</th>
<th>Accessory</th>
<th>Vacuums (can use any)</th>
<th>Method of compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG 450-7S AG 450-7D</td>
<td>Dust guard grinding hoods (Item number 2102983)</td>
<td>VC 125-6</td>
<td>Table 1 compliant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 125-9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 20-U</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 40-U</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-6 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-10 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-6 XE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-10 XE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 300-17 X</td>
<td></td>
</tr>
<tr>
<td>DEG 500 DCG 500-S DAG 500-D AG 500-11S AG 500-12D</td>
<td>Dust guard grinding hoods (Item number 267719 or Item number 2126539)</td>
<td>VC 150-6 X</td>
<td>Table 1 compliant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-10 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-6 XE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-10 XE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 300-17 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 125-6</td>
<td></td>
</tr>
<tr>
<td>AG 600-A 36</td>
<td>Dust guard grinding hoods (Item number 267719 or Item number 2126539)</td>
<td>VC 150-6 X</td>
<td>Table 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-10 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-6 XE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 150-10 XE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 300-17 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 125-6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 125-9</td>
<td></td>
</tr>
<tr>
<td>DG 150</td>
<td>Vacuum adapter (Item number 281862)</td>
<td>VC 125-6</td>
<td>Table 1 / Objective data*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 125-9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 20-U</td>
<td>Exposure assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC 40-U</td>
<td>Objective data*</td>
</tr>
</tbody>
</table>

*See Hilti’s published Objective Data — if not applicable to a specific application, exposure assessment is required.
SYSTEM OVERVIEW

Hilti concrete grinding tools are table 1 compliant through use of a dust collection shroud hooked up to a vacuum that meets table 1 requirements. Hilti currently offers the below systems with this configuration:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Accessory</th>
<th>Vacuum (use any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG 450-7S</td>
<td>4-1/2” grinding hood</td>
<td>VC 125-6, VC 125-9</td>
</tr>
<tr>
<td>AG 450-7D</td>
<td></td>
<td>VC 20-U, VC 150-6 X</td>
</tr>
<tr>
<td>DEG 500</td>
<td></td>
<td>VC 150-6 XE, VC 40-U</td>
</tr>
<tr>
<td>DCG 500-S</td>
<td></td>
<td>VC 150-10 X, VC 40-UE</td>
</tr>
<tr>
<td>DAG 500-D</td>
<td></td>
<td>VC 150-10 XE, VC 300-17 X</td>
</tr>
<tr>
<td>AG 500-11S</td>
<td>5” grinding hood</td>
<td></td>
</tr>
<tr>
<td>AG 500-11D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: previous generations of tools may have different item numbers or nomenclature. Check with your local Hilti representative or product instruction manual to verify.
<table>
<thead>
<tr>
<th>Tool</th>
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<td>AG 600-A 38</td>
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<td>VC 300-17 X</td>
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<td>Vacuum adapter</td>
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<td>VC 125-9*</td>
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<td>VC 20-U**</td>
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*Exposure assessment required
**See Hilti’s published Objective Data — if not applicable to a specific application, exposure assessment is required.
***Table 1 compliant, with the option to use objective data test report
OSHA 29 CFR §1926.1153
Respirable Silica Dust Exposure

Objective Test Data – Grinding
Hilti DG 150 with VC20-U/40-U/40-UE vacuum

Hilti has performed testing of the above system to determine the operator’s respirable silica dust exposure in accordance with EN 50632-1 and EN 50632-2-3. Testing was performed under the following conditions:

- Room size: 7.8m x 7.8m x 3.3m (200 m³). Closed – no air exchange.
- Grinding disc: DG-CW 150/6” CR-SP
- Test duration: 1 hour.
- Weight of collected dust: 1590 g.
- Grinding orientation: 15° from vertical.
- Grinding height: 2’-6” above floor-level.
- Force applied: average 70-90% of tool rated amperage.
- Base material: concrete slab.
- Sampler: 10 l/min GSP pump, FSP sampler. ISO 7708-compliant. 5 μm filter.
- Air sample volume collected during test: 600 liters.

Results:

<table>
<thead>
<tr>
<th>Time-Weighted Average Respirable Silica Dust Exposure¹,²</th>
<th>43 μg/m³</th>
</tr>
</thead>
</table>

¹ The silica content of base materials varies. As a result, the silica content in respirable dust samples also varies. The above-published exposure value is based on a 20% silica content applied to the total respirable dust measurement. Measured average silica content during testing was 10.0%.
² Exposure value represents the time-weighted average (TWA) over the 1-hour test period. Due to the test being conducted in a closed, non-ventilated room, this TWA exposure value would increase if the test duration was extended under the same conditions.
29 CFR §1926.1153(d)(2)(ii)
Performance Option
How to utilize Hilti “Objective Data”

Hilti has conducted testing to establish the respirable silica dust exposure (“exposure level”), associated with the use of various Hilti tool systems. These tests were performed in accordance with EN 50632, except the specific work configuration may vary to provide more versatile data and better address U.S. practices. The purpose of the testing was to generate “Objective Data” to be used as part of the exposure assessment requirements of 29 CFR §1926.1153(d)(2)(ii).

Per the EN standard, testing was performed for 1 hour in a 200m³ closed, non-ventilated room. Under these conditions, exposure levels increase over time. The exposure values published in Hilti’s Objective Data represent the average over the 1-hour test period (1-hour TWA)¹. Meaning the TWA started at zero, rose to the published 1-hour value, and would continue to rise if the test were continued.

Several underlying concepts important to applying the Objective Data to any case-specific assessment:

1. More/less work performed in a given time period will increase/decrease the exposure level.
2. Larger/smaller room size will decrease/increase the exposure level.
3. Air exchange decreases exposure levels. Specifically, a 100% air-exchange every hour (either by the work moving to a discrete area, or via sufficient air movement), means Hilti’s published 1-hour TWA exposure level is expected to conservatively represent a steady-state TWA. The conceptual basis is two-fold: air exchange would inherently reduce the published “closed room” exposure value. And sufficient air exchange to “reset” the environment every hour would keep the exposure values at that level. For reference, a typical 20", 2500 CFM box fan would introduce 100% new air volume in Hilti’s test chamber (7,200 ft³), every 3 minutes².
4. The OSHA 50 μg/m³ Permissible Exposure Level (PEL), is based on an 8-hour TWA. This means the exposure level as an 8-hour TWA is ≤50 μg/m³; a 4-hour TWA is ≤100 μg/m³ (assuming no exposure for the remainder of the shift); a 2-hour TWA is ≤200 μg/m³ (assuming no exposure for the remainder of the shift) etc. (time [hours] x exposure level [μg/m³] ≤ 400).

Hilti’s published Objective Data states the amount of work performed during the 1-hour test (“1-hour work”). Therefore, the respirable silica dust exposure level in any case-specific situation is expected to be below the 8-hour TWA PEL in the following conditions³:

- An employee performing ≤ “1-hour work” during a shift.
- An employee performing ≤ “1-hour work” in an hour, then moving to another discrete area and performing ≤ “1-hour work” in an hour, etc., throughout an entire shift.
- An employee performing ≤ “1-hour work” each hour, in an environment with sufficient air-exchange to prevent accumulation of airborne dust.

¹ Hilti’s published Objective Data incorporates a silica content of 20% of the total respirable dust measurement. Site-specific silica content varies. OSHA Docket No. OSHA-2010-0034, reviewed 588 respirable dust samples from construction tasks, finding the silica content varied from <1%-50%, with an average of 9.1%.
² Note introduction/exhaust of 100% air volume does not necessarily correlate to a 100% air exchange.
³ As long as: (1) Hilti’s published Objective Data exposure level is ≤50 μg/m³; (2) work is performed in a room with volume ≥ 200m³, and/or having adequate ventilation; and (3) site-specific respirable silica content is ≤20% of total respirable dust.
GRINDING

Grinding Dust Control — OSHA

Hilti developed dust collection systems for its angle grinders with a shroud, to be attached to a Hilti vacuum with a filter cleaning mechanism and 99% filter efficiency, compliant with OSHA 1926.1153, Table 1.

Set-up

1. Attach the appropriate dust collection shroud to the grinder.
2. Select appropriately-sized vacuum (per OSHA Table 1, the vacuum must have a rating of at least 25 cfm per inch of wheel diameter). Attach vacuum hose to grinder shroud.
3. Start vacuum.
4. Verify proper operation of the dust collection system, including suction at the shroud
   - Check for damage or leaks in the vacuum, hose, and shroud.
   - See instructions for vacuum.
5. Verify the shroud seal is intact, and extends to at least the face of the cup wheel.

Grinding

1. Start the vacuum before beginning to grind.
2. Hold the cup wheel face parallel with (flat to) the work surface. Always maintain the grinder such that the shroud seal is in full contact with the work surface (i.e., do not tilt the grinder)
3. Avoid grinding over a free edge of the work surface as much as possible.
   - Shrouds can be opened slightly to allow close access to a perpendicular obstruction. Only operate in this opened condition when necessary.
4. Release the tool trigger and allow the grinder to come to a complete stop before lifting it from the work surface. Keep vacuum running until grinding operation is completed.

Cleaning and maintenance

- See instructions for vacuum.
For instructions on how to assemble these systems, please refer to the Hilti North America Youtube page

- VC 125
- VC 150
- VC 300

CONTENTS

Statements of compliance ................................................................. 33–34
HEPA certification for VC 125, 150, and 300 series vacuums .................. 35–37
HEPA certification for VC 20, 40 series vacuums .................................. 38–47
Supplemental instructions ................................................................. 48–52
June 23, 2017

Statement on features of Hilti VC 20, 40, 150, and 300 series vacuums:

Regarding OSHA 29 CFR Part 1926 §1153, please note that the Hilti VC 20-U, VC 40-U, VC 40-UE, VC 150-6 X, VC 150-6 XE, VC 150-10 X, VC 150-10 XE, and VC 300-17 X vacuums all meet the following requirements given in Table 1:
  • 99% or greater filter efficiency
  • self-cleaning filter mechanism
  • provide the below cubic feet per minute (cfm) of suction
    o VC 20-U and 40-U: 129 cfm
    o VC 150 series: 150 cfm
    o VC 300 series: 300 cfm
  • a HEPA filter is available

When used in conjunction with the corresponding Hilti tools and dust removal systems meeting the listed Table 1 requirements, you will have a compliant system as specified in the regulation.

Please contact your local Hilti representative with any additional questions. For additional clarification, please refer to 29 CFR Part 1926 §1153.

Sincerely,

Hilti product team
June 23, 2017

Statement on features of Hilti VC 125 series vacuums:

Regarding OSHA 29 CFR Part 1926 §1153, please note that the Hilti 125-6 and 125-9 vacuums all meet the following requirements given in Table 1:

- 99% or greater filter efficiency
- Manual filter mechanism
- provide 125 cfm
- a HEPA filter is available

When used in conjunction with the corresponding Hilti tools and dust removal systems meeting the listed Table 1 requirements, you will have a compliant system as specified in the regulation.

Please contact your local Hilti representative with any additional questions. For additional clarification, please refer to 29 CFR Part 1926 §1153.

Sincerely,

Hilti product team
**SERVICE WORK ORDER**

**WORK ORDER NO:** 312-146996  
**CUST PO#:** CREDIT CARD

---

**Bill To:** TX3592  
**Service Location:** TX3592-002

<table>
<thead>
<tr>
<th>ENV SERVICES, INC.</th>
<th>HILTI INC.</th>
</tr>
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<tbody>
<tr>
<td>4738 RESEARCH DRIVE</td>
<td>3701 ROYAL LANE</td>
</tr>
<tr>
<td>SAN ANTONIO, TX 78240</td>
<td>SUITE 100</td>
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<tr>
<td>800-690-3368 / 210-699-3646 FAX</td>
<td>IRVING, TX 75063</td>
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<td></td>
<td>972-403-5887</td>
</tr>
<tr>
<td></td>
<td>FRANK HIERONYMUS</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:FRANK.HIERONYMUS@HILTI.COM">FRANK.HIERONYMUS@HILTI.COM</a></td>
</tr>
</tbody>
</table>

**SERVICE SCHEDULE DATE:**  
**SCHEDULE ADMIN:** 204  
**TECH:** 611  
**CUSTOMER NOTES / INSTRUCTIONS:**

---

**SERVICE REQUESTED: TEST AND CERTIFICATION**

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<th>Asset #</th>
<th>Description of Services</th>
<th>Location</th>
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</table>
| 1      |         | ONSITE CERTIFICATION  
**TESTING OF 7 NEW VACUUMS FOR COMPLIANCE WITH HEPA**  
**PLEASE NOTE THAT THE DAY RATE APPLIES TO THE TESTING LISTED IN THE LINE ITEMS BELOW** |

| 2      |         | ONSITE CERTIFICATION  
**TEST AND CERTIFICATION - NEW VACUUM** |
|        | ITEM NUMBER: 2167143 | DESCRIPTIION: VC 300-17X  
FLOW RATE: 300 CU FT/MIN |

| 3      |         | ONSITE CERTIFICATION  
**TEST AND CERTIFICATION - NEW VACUUM** |
|        | ITEM NUMBER: 2167144 | DESCRIPTIION: VC 150-6XE  
FLOW RATE: 150 CU FT/MIN |

| 4      |         | ONSITE CERTIFICATION  
**TEST AND CERTIFICATION - NEW VACUUM** |
|        | ITEM NUMBER: 2167145 | DESCRIPTIION: VC 150-10XE  
FLOW RATE: 150 CU FT/MIN |

| 5      |         | ONSITE CERTIFICATION  
**TEST AND CERTIFICATION - NEW VACUUM** |
|        | ITEM NUMBER: 2167146 | DESCRIPTIION: VC 150-6XE  
FLOW RATE: 150 CU FT/MIN |

| 6      |         | ONSITE CERTIFICATION |

---

**CUSTOMER SIGNATURE:**  
**DATE:** ____________  
**TECH SIGNATURE:**  
**DATE:** 16 Jun 2017  
**Page 1 of 2**
### SERVICE WORK ORDER

**WORK ORDER NO:** 312-146996  
**CUST PO#:** CREDIT CARD

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**Bill To:** TX3592  
**Service Location:** TX3592-002

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ITEM NUMBER: 2167147  
DESCRIPTION: VC 150-10XE  
FLOW RATE: 150 CU FT/MIN |          |
| 8      |         | ONSITE CERTIFICATION  
TEST AND CERTIFICATION - NEW VACUUM  
ITEM NUMBER: 2167149  
DESCRIPTION: VC 125-9  
FLOW RATE: 125 CU FT/MIN |          |

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**CUSTOMER SIGNATURE:**  
**TECH SIGNATURE:**

**DATE:**  
**DATE:** 16 Jan 2017  
Page 2 of 2
HILTI INC.
3701 ROYAL LANE
SUITE 100
IRVING, TEXAS 75063

FRANK HIERONYMUS
972/403-5867

JERRY MAXWELL
16-Jun-17

CUSTOM

WAREHOUSE

PASS  FAIL  N/A

hepa leak test completed on item numbers 2167143, 2167144, 2167145, 2167146, 2167147, 2167148, and 2167149. All passed.

FRANK HIERONYMUS

Jerry Maxwell
16-Jun-17
HEPA VACUUM TEST REPORT

Prepared for:
HILTI Inc.
7250 North Dallas Parkway
Plano, TX 75024

Models: VC20U, VC40U, VC40U /outlet

Attention:
Frank Hieronymus
918-712-2349

Date(s) Tested:
7/13/15

Field Service Technician(s):
Ken Waterhouse

ENV SERVICES
4758 Research Drive
San Antonio, TX 78240
(210) 690-3368
Fax (210) 690-3646
HEPA LEAK TESTING OF HILTI HEPA VACUUM UNITS
BENCH TESTING FOR AEROSOL PENETRATION

Setup

Each Vacuum is setup with an internal prefilter bag placed in the base of the bucket and a HEPA filter placed below the motor.
Airflow enters the intake and is then passed through the prefilter bag and then is siphoned up through the HEPA filter and then discharged through hoses on the right and left side of the vacuum housing.

Procedure:
Following guidelines within Reference Standard, IES-RP-CC-0034.1
HEPA and ULPA Filter Leak Tests.
A large bag was placed over the outlet side of the Vacuum unit.
The Intake airflow was measured with a Velocity meter set for CFM Calculation (135 CFM).
A calculated concentration was followed using an aerosol challenge for >10 micrograms per liter of PAC Aerosol.
The Aerosol Photometer was set at a sensitivity of 50 micrograms, and the test proceeded by insertion of aerosol in the intake and sampling the outflow of the air filling the collection bag.
No leakage greater than .005% was detected.

Test Setup showing Aerosol Generator on right HILTI VC20U Vacuum in middle with catch bag attached, and Aerosol Photometer on the left.

[Signature]
[Signature]
[Signature]
Conclusions:
All Models passed the aerosol penetration leak test of no leakage greater than .005% penetration detected.

See Certificates

Test Equipment Used:

Tec Services Inc. Aerosol Photometer
Model # PH-5
Serial # 2027
Calibration Date: 29JUN2015

ATI Model 6B Aerosol Generator
6 Nozzle
S# 26536

Velocity Meter
TSI
Model # 9535
S# T95351514002
CALIBRATION CERTIFICATE

All calibrations are performed by qualified personnel using instrumentation, procedures and methods which guarantee specifications claimed are reliable. When specified, all calibrations are performed in accordance with current ISO/IEC 17025, ANSI/NCSL Z-540-1, MIL-STD-45662A, and ENV/Pro-Lab Quality Manual - Rev 5. Standards used are traceable to The National Institute of Standards and Technology (NIST). Expanded uncertainties are calculated using methods described in the Guide to the Expression of Uncertainty of Measurement (GUM) utilizing a coverage factor of K=2 (95% confidence) and kept on file at Pro-Lab. At a minimum, standards are selected with an uncertainty of 25% or better, where possible. This certificate and/or data shall not be reproduced except in full, without the written permission of Pro-Lab Management.

Standards Used

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Temperature: 23.0 °C
Humidity: 54.6% RH
Approved By: Michael Blahut

E-Signed 11-Jun-2015 11:05 AM

Date Tested: 11-Jun-2015
Date Due: 30-Jun-2016
Calibrated By: David Andreas
Calibration Technician
E-Signed 11-Jun-2015 8:37 AM
## UNIT UNDER TEST
- **Manufacturer:** TSI
- **Model No.:** 9535
- **Serial No.:** T95351514002
- **Cust. Ref. No.:** 01263
- **Description:** AIR VELOCITY METER
- **Date Rec'd:** 6/3/2015
- **Condition Rec'd:** GOOD

## SUBMITTED BY
- **Customer:** ENV SERVICES, INC (REGION I)
  - 2880 BERGEY RD
  - HATFIELD, PA 19440
- **P.O. #:** ENV610
- **Precaution:** OUT OF SPEC
- **Final:** IN SPEC

## CALIBRATION DATA

Note: Calibration results may drift from documented values prior to calibration due date attributable to various factors. Results obtained apply to the UUT only and are reflective of conditions at the time of this test.

### Velocity

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### TEMPERATURE

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UNIT UNDER TEST
Manufacturer: TEC SERVICES
Model No.: PH-5
Serial No.: 2027
Cust. Ref. No.: 01289
Description: PHOTOMETER
Date Rec'd: 6/19/2015
Condition Rec'd: GOOD

SUBMITTED BY
Customer: ENV SERVICES, INC (REGION I)
2880 BERGEY RD
HATFIELD, PA 19440
P.O. #: ENV/600
Precal: IN SPEC
Final: IN SPEC

CALIBRATION CERTIFICATE

All calibrations are performed by qualified personnel using instrumentation, procedures and methods which guarantee specifications claimed are reliable. When specified, all calibrations are performed in accordance with current ISO/IEC 17025, ANSI/NCSL Z-540-1, MIL-STD-45662A, and ENV/Pro-Lab Quality Manual - Rev 5. Standards used are traceable to The National Institute of Standards and Technology (NIST). Expanded uncertainties are calculated using methods described in the Guide to the Expression of Uncertainty of Measurement (GUM) utilizing a coverage factor of K=2 (95% confidence) and kept on file at Pro-Lab. At a minimum, standards are selected with an uncertainty of 25% or better, where possible. This certificate and/or data shall not be reproduced except in full, without the written permission of Pro-Lab Management.

Standards Used

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Temperature: 22.0 C
Humidity: 35.0% RH
Approved By: Michael Blahut
E-Signed 30-Jun-2015 1:12 PM

Date Tested: 29-Jun-2015
Date Due: 30-Jun-2016
Calibrated By: William Leas, Jr.
Calibration Technician
E-Signed 29-Jun-2015 2:08 PM

-- A DIVISION OF ENV SERVICES, INC. --
2880 BERGEY ROAD SUITE K - HATFIELD, PA 19440-1742 - (800) 992-9108 - FAX (215) 822-6522
### Vacuum Submittal

**Certificate No.:** ENV/0615-478-14854  
**Procedure No.:** MFR

---

### UNIT UNDER TEST

- **Manufacturer:** TEC SERVICES  
- **Model No.:** PH-5  
- **Serial No.:** 2027  
- **Cust. Ref. No.:** 01289  
- **Description:** PHOTOMETER  
- **Date Rec'd:** 6/19/2015  
- **Condition Rec'd:** GOOD

### SUBMITTED BY

- **Customer:** ENV SERVICES, INC (REGION I)  
  2880 BERGEY RD  
  HATFIELD, PA 19440

- **P.O. #:** ENV/600  
- **Precal:** IN SPEC  
- **Final:** IN SPEC

---

### CALIBRATION DATA

Specifications obtained from: TEC SERVICES MODEL PH-5 PHOTOMETER USER MANUAL.

**Note:** Calibration results may drift from documented values prior to calibration due to circumstances attributable to various factors. Results obtained apply to the UUT only and are reflective of conditions at the time of this test.

#### DC VOLTAGES

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</tr>
<tr>
<td>V (V4)</td>
<td>24.00</td>
<td>24.00</td>
<td>24.00</td>
<td>23.50</td>
<td>24.50</td>
</tr>
</tbody>
</table>

#### SAMPLE FLOW

<table>
<thead>
<tr>
<th>Description</th>
<th>Standard</th>
<th>As Found</th>
<th>Final</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFM</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.90</td>
<td>1.10</td>
</tr>
</tbody>
</table>

#### FUNCTIONAL TEST

- **SCANNING PROBE**  
  - Standard: PASS  
  - As Found: PASS  
  - Final: PASS  
  - Min.: PASS  
  - Max.: PASS

- **UPSTREAM RESPONSE + CLEAR TO ZERO**  
  - Standard: PASS  
  - As Found: PASS  
  - Final: PASS  
  - Min.: PASS  
  - Max.: PASS

- **DOWNSTREAM RESPONSE + CLEAR TO ZERO**  
  - Standard: PASS  
  - As Found: PASS  
  - Final: PASS  
  - Min.: PASS  
  - Max.: PASS

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Certificate of Compliance

HILTI VC20U HEPA Vacuum Unit

Hilti, Inc.
7250 North Dallas Parkway
Plano, TX 75024

On this Date: 7/13/2015

Testing conducted in accordance with IES RP-CC-002 & Following guidelines within
Reference Standard; IES-RP-CC-0034.1

Conducted by: ENV Services, Inc.
4758 Research Dr.
San Antonio, TX 78240

Administered By: Ken Waterhouse
Certificate of Compliance

HILTI VC40U HEPA Vacuum Unit

Hilti, Inc.
7250 North Dallas Parkway
Plano, TX 75024

On this Date: 7/13/2015

Testing conducted in accordance with IES RP-CC-002 & Following guidelines within Reference Standard; IES-RP-CC-0034.1

Conducted by: ENV Services, Inc.
4758 Research Dr.
San Antonio, TX 78240

Administered By: Ken Waterhouse
Certificate of Compliance

HILTI VC40U/Outlet HEPA Vacuum Unit

Hilti, Inc.
7250 North Dallas Parkway
Plano, TX 75024

On this Date: 7/13/2015

Testing conducted in accordance with IES RP-CC-002 & Following guidelines within Reference Standard; IES-RP-CC-0034.1

Conducted by: ENV Services, Inc.
4758 Research Dr.
San Antonio, TX 78240

Administered By: Ken Waterhouse
VACUUM CLEANER

VC 125 / 150 / 300 OSHA

Hilti developed a vacuum cleaner system with a filter cleaning mechanism and a >99% filter efficiency, compliant with many of the OSHA 1926.1153, Table 1 specified controls.

Set-up

1. Put a filter into the filter compartment. Decide which filter depending on your applications. See filter section for further information.
2. Put filter bag into the tank. Decide which filter bag depending on your applications. See filter bag section for further information.
3. Put hose into head and attach it to the adaptor of the tool. See tool manual for further information on correct adaptor.
4. Plug vacuum cleaner in socket.
5. Start vacuum cleaner by turning control switch on. Verify proper operation of vacuum cleaner.
   • head on correct and sealed
   • no kinks/breaks/plugs in hose
   • check for normal suction at hose end
   • nothing blocking exhaust port
   • For VC 20/40/150/300, verify the automatic filter cleaning mechanism is turned on, and operating (audible thumping every ~15 seconds).
6. Start running the tool only when vacuum cleaner is on.
7. Turn vacuum cleaner off after tool is turned off.

Cleaning and maintenance

1. For VC 125, push manual filter cleaning button every 3 to 5 minutes depending on application, and whenever there is a noticeable change in suction or dust collection.
2. Filter and filter bag needs to be cleaned and exchanged regularly. See filter and filter bag section for further information.
### Applications
- For dry and wet applications
- Will not increase lifetime of filter, no pre-filtering

### How to put bag in vacuum
1. Remove head from tank
2. Put bag into the tank
3. Check that holes are within the vacuum cleaner when installed and that the plastic bag doesn’t overlap clamp area
4. Put head back on tank and close clamps properly

### Disposal guidelines
- Recycle bag when it is full
- Tie off or seal paper/fleece bags. Twist plastic bags. Roll bucket to nearest sealed receptacle and transfer bag to garbage.
- To be recycled normally (dispose of bag according to local regulations)

### Universal Bag
- For dry applications
- Virtually dustless recycling / emptying
- Pre-filter, will increase lifetime of filter

### Plastic Bag
- Close cap when bag is full or needs to be recycled
- Dispose of bag according to local regulations.
**DO’S AND DON’TS WITH UNIVERSAL FILTER-BAGS / PLASTIC BAGS**

**Plastic Bag**

- **Do’s**
  - Dispose of bag when it is full

- **Don’ts**
  - Fill plastic bag to completely full, it can rip apart
  - Overlap the clamp area with the plastic bag

**Universal Bag**

- **Do’s**
  - Use filter bags for all dry applications
    - Increases lifetime of your tool
    - Increase lifetime of your filter
  - Dispose of bag when it is full
  - Mandatory for all wood applications
  - Connect flange of filter bag properly into adapter

- **Don’ts**
  - Shake full filter-bag
    - Dust can exit
    - Bag can rip apart
  - Use bag for wet applications
DO’S AND DON’TS WITH FILTERS

**Do’s**

- Clean filter with automatic filter cleaning (close hose for 3-5 cycles)
- Power cleaning: Remove hose, close inlet for 3-5 automatic filter cleaning cycles
- Use performance filters (PTFE) in order to have a longer lifetime of your tool, longer lifetime of the filter and less blockage of the filter
- Filter sealing needs to be properly installed
- During filter change, clean up filter frame and sealing area
- Check filter condition before starting an application

**Don’ts**

- Mix dry and wet applications. Filter used for wet applications needs to be exchanged or dried before using it for dry applications
- Manually cleaning the filter, it will be damaged -> a damaged or missing filter can lead to a broken turbine since dust can enter (reduces lifetime of vacuum cleaner)
  - Banging against the wall
  - Cleaning with high-pressured air
  - Use water jet / air pressure jet to clean the filter
  - Use sharp things e.g. wrench etc. to clean the filter
- Use vacuum cleaner without a filter
FILTER CLEANING AND EXCHANGE

Filter needs to be cleaned when:

- Feeling of less suction power
  - Clean filter with automatic filter cleaning
- Dust is coming out of the vacuum cleaner. Indication that filter is broken or blocked
- Visual check shows that filter needs to be cleaned

Filter needs to be exchanged when:

- Dust is coming out of the vacuum cleaner. Indication that filter is broken or blocked
- Even after cleaning the filter, suction power is insufficient
- Visual check shows that filter needs to be exchanged due to a high volume of dust near or inside the filter