



CARE GUIDANCE

RECOMMENDATIONS ON BEST PRACTICE

LEVEL 3

Powered hand tools



POWERED HAND TOOLS

INTRODUCTION

This is a level 3 document in the ECFIA Workplace Recommendation series and should be read in conjunction with the level 1 document "Working with HTIW – Effective Risk Management".

Control measures for any finishing functions, including use of powered hand tools, are generally a combination of technological solutions and working practises to eliminate or reduce exposure. Selecting the right combination is very important and measures will only work effectively if they are used properly.

WHAT IS THE CARE PROGRAMME?

ECFIA's Controlled And Reduced Exposure (CARE) Programme is an important part of the Product Stewardship Programme. It allows employers to proactively minimize fibrous dust exposure and thus protect workers' health.

WHAT ARE THE CARE GUIDANCE DOCUMENTS?

These documents form a comprehensive library of information on the safe handling and use of HTIW products. They have been written by industry experts and are designed to give customers of ECFIA members helpful information to put in place effective controls to minimise exposure to airborne fibres. This series of documents will progressively grow as new documents are produced.

Level 1 guidance document: "Working with HTIW - Effective risk management"

Level 2 guidance documents: Risk management measures applicable to HTIW

Level 3 guidance documents: Examples of specific applications

USE OF POWERED HAND TOOLS

Use of powered hand tools normally relates to finishing tasks undertaken during installation, removal or maintenance of HTIW linings, which are generally high energy activities. The potential to generate elevated dust concentrations when using powered hand tools can be influenced by:

- The type of hand tool and application
- Form of the HTIW product
- Control measures in place:
 - Use of local exhaust ventilation on the tool
 - Use of local exhaust ventilation at the work station
- Method of housekeeping: HEPA vacuuming preferred
- Manner and extent of material handling



Fig. 1: local exhaust ventilation on tool

Powered hand tools include for example:

- Circular saws
- Disc sanders
- Grinders
- Routers
- Drills

When working with HTIW, all these tools can generate high levels of fibrous dust if used in uncontrolled conditions. The type of tool, the nature of the application and the level of control will determine the potential airborne dust concentration.

EXAMPLES OF CONTROLS

For powered hand tools, there are two options: The down-draft table and exhaust ventilation on the tool itself.

The down-draft table draws dust down through a perforated table-top; this does not impair tool use, but it is best used with smaller parts because large parts can block the airflow and create pockets of dust-filled air.

Capture is better accomplished by adding a suction casing, or shroud (hood), and a vacuum hose as close as possible to the dust-generating portion of the tool. Ductwork would typically be located overhead, connected to the dust collection unit using suction outlets allowing individual hoses to be dropped down to the work area.

Exhaust ventilation (capture) on the tool:

A HEPA vacuum is used for dust collection/extraction from the hose assembly and shroud/hood connected to the tool head.

Dust collection:

HEPA vacuum units can be used for this purpose; the most effective is a system offering reverse pulse jet cleaning of filters, combined with a conical pleated cartridge. The key to any effective vacuum system is an efficient filtration system. A cyclone system allows coarse particles of debris to be separated from the fine particulates, which are then collected by the pleated filter system, with >99.9% efficiency. The ability to clean the filters whilst the vacuums are in use by means of pulse cleaning also aids efficiency. The hose should be flexible in use and suitable for the application.

Hoods

Examples of shrouds/hoods for the tool head:



Fig. 2



Fig. 3

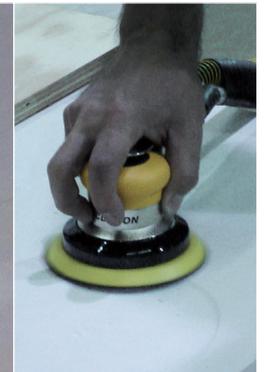


Fig. 4

Mobile System

A dust control system can be docked onto a temporary or permanent ducting system, installed in the work area with flap valve connection points for the user:



Fig. 5



Fig. 6

The valves ensure that suction only occurs when the tool is actually in use.

Examples of personal and area fibre concentration with and without extraction (US based study with 200 cubic feet per minute)

| TYPE OF PORTABLE TOOL | WITH EXTRACTION (F/ML) | WITHOUT EXTRACTION (F/ML) | SAMPLE POSITION |
|-----------------------|---------------------------|------------------------------|--------------------|
| 2" Cut off Saw | 0.052 | 3.7 | Personal |
| | 0.051 | 4.0 | Area |
| 3" Cut off Saw | 0.052 | 3.5 | Personal |
| | 0.051 | 3.7 | Areas |
| 1/2" Belt Sander | 0.071 | 5.6 | Personal |
| | 0.290 | 3.7 | Area |
| 2" Right Angle Sander | 0.058 | 53.0 | Personal |
| | 0.052 | 37.0 | Area |
| 5" Orbital Sander | 0.052 | 4.7 | Personal |
| | 0.052 | 4.5 | Area |
| Router with 1/2" Bit | 0.052 | 4.1 | Personal |
| | 0.052 | 1.7 | Area |
| Radial Shroud Grinder | 0.130 | 35.0 | Personal |
| | 0.100 | 2.5 | Area |

SUMMARY

To Summarise:

- There is a need to select the right system for each tool and the correct dust extraction unit for the task.
- The dust extraction unit may be integrated in the tool or be a separate unit.
- Work should only be undertaken with a dust extraction system in place.
- The extraction system must be checked to ensure it always works correctly.
- The dust extraction unit has to fulfil at least the requirements of dust-class M according to EN 60335-2-69.

Personal Protective Equipment (PPE)

(Refer to the level 2 CARE guidance document "Use of Personal Protective Equipment (PPE)")

In all instances when using powered hand tools for work with HTIW, PPE would still be required and would need to be assessed on a task by task basis. When working with HTIW products, respiratory protection should still be mandated and as a minimum FFP3/P3 protection would be required.