



# CARE GUIDANCE

RECOMMENDATIONS ON BEST PRACTICE

**LEVEL 3**

Partial or total enclosure design for a raw material feeding station



# PARTIAL OR TOTAL ENCLOSURE DESIGN FOR A RAW MATERIAL FEEDING STATION

## INTRODUCTION

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

## 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

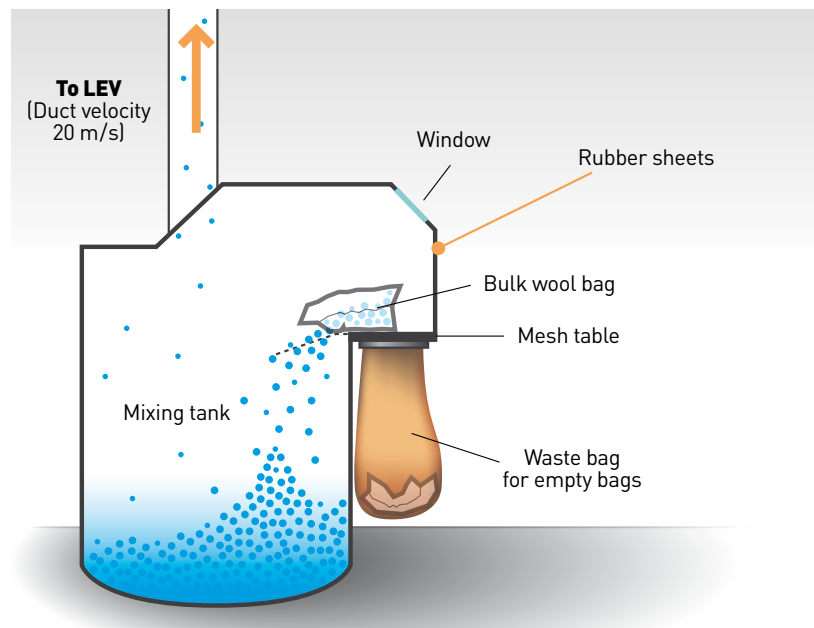
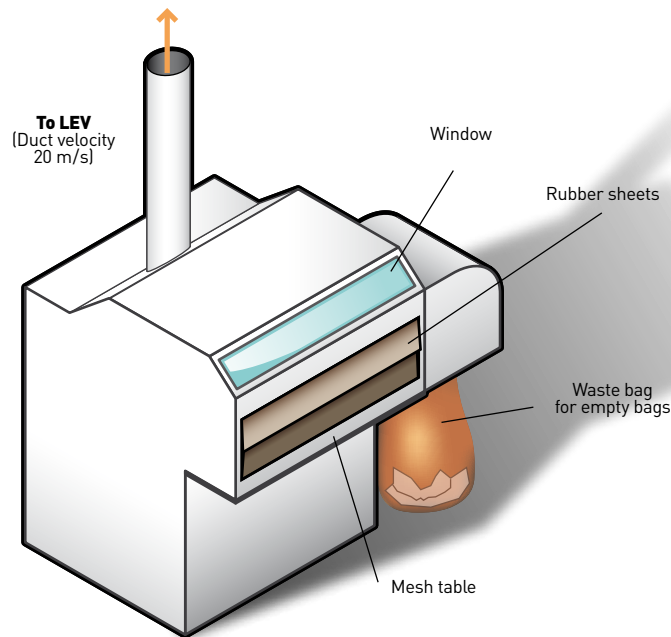
## FEEDING PROCESS

HTIW bulk/wool (and offcuts) and other dusty raw materials are used in various secondary processes, such as forming, where HTIW and ingredients (i.e. binder) are mixed in water to produce shaped parts (boards, pipes etc.). In such applications bagged material may be used, involving the opening and emptying of bags.

The opening and emptying of bags during the feeding process can generate high levels of fibrous dust, potentially exposing the operator to high respirable dust concentrations. Such operations therefore need to be undertaken under a proper dust control system, including local exhaust ventilation (LEV), to minimise workers' exposure.

An LEV system consists of a hood or enclosure, ductwork, an air cleaning (filtration) system and a fan. (See the ECFIA CARE Guidance series level 2 document "Local Exhaust Ventilation (LEV) Systems for HTIW" for details).

**EXAMPLE OF A  
MIXING TANK WITH  
TOTAL ENCLOSURE  
AND LEV**



In this example, the worker places the bag on the mesh table before opening it and emptying the contents into the water tank. Once emptied, the bag is placed in the waste bag container which is located inside the ventilated hood to avoid the release of dust-laden air. When securely closed the waste bag container can be removed and sent for appropriate disposal.

In order to minimise the airflow, the hood opening should be as small as possible (e.g. in this example 1.40 m in width and 0.40 m in height) while large enough to allow easy handling of the bag.

**DOCUMENT LEVEL 3**

Example: A hood opening 1.40 m x 0.40 m will have a face surface of 0.56 m<sup>2</sup>. The air velocity at the opening (the face velocity) should be around 1.00 m/s to ensure that no dust can escape from the enclosure. The exact face velocity will depend of the nature of the dust and the velocity of the particles at the hood face. In this example the required flow rate will be about 0.56 m<sup>3</sup>/s or 2016 m<sup>3</sup>/h.

Using a door equipped with rubber sheets/curtains, the required flow rate in the LEV system can be reduced by a factor of at least 3 to 10, while still maintaining full efficiency, allowing a significant reduction in size of the dust collection system.



The operator inserts his hands between the rubber sheets and opens the bag.

The contents of the bag are then emptied onto a conveyor belt leading to the next process stage.

The empty bag is pressed into a container inside the enclosure. This container may be taken out of the enclosure by a separate door.

See drawing below for further details.

