



# CARE GUIDANCE

RECOMMENDATIONS ON BEST PRACTICE

**LEVEL 2**

Exposure reduction through use of alternative product forms and processes



# EXPOSURE REDUCTION THROUGH USE OF ALTERNATIVE PRODUCT FORMS AND PROCESSES

## INTRODUCTION

This is a level 2 document in the ECFIA CARE Guidance series and should be read in conjunction with the level 1 document "Working with HTIW – Effective Risk Management".

This document provides information on potential means of reducing workplace exposure to HTIW dust by the use of alternative product forms and processes. The advice provided in this document is generic (i.e. it applies to all HTIW products).<sup>1</sup>

## 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

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<sup>1</sup> The information contained in this document must not be confused with the legal substitute evaluation requirement applicable for RCF/ASW. While the target of the legal substitution requirement is ultimately the replacement of a hazardous material (as far as technically and economically feasible), the focus of this document is related to exposure management.



## ALTERNATIVES TO REDUCE EXPOSURE TO AIRBORNE FIBRES

Changing (substituting) either the **form** of the HTIW product used or the product **manufacturing process** can result in a reduction in levels of exposure to fibrous dust.

A change in product form will often be an appropriate option in assembly or installation activities/applications as this can result in dusty manufacturing processes being relocated further up the supply chain where they can be undertaken under more controlled conditions (see level 3 documents on technical exposure controls for details).

A change in the manufacturing process may help to reduce dust levels – typically by eliminating certain machining or handling steps or by reducing the amount of applied kinetic energy.

Installation activities are often carried out on a construction site which doesn't allow for full encapsulation/enclosure or the installation of efficient exhaust ventilation systems. One typical example is the installation of industrial furnace linings.

**As applications are most often unique, there is a need to look at possible technical solutions "case by case". In each situation there is the need to perform a full risk assessment of any alternative approach according to the particular application and/or process.**

The most frequently used pre-fabricated modules are those specifically designed for direct installation, without further modification. In some applications alternative product forms, such as film-encapsulated ready-to-use modules and/or pre-fabricated batten strips (die cut pieces), may be used.

1. In this example, the encapsulation is applied at the module making facility under controlled conditions. The encapsulated ready-to-use module has a significantly reduced potential for fibrous dust release during installation.

However, it is important to note that:

- Removal of the plastic film from the lining before firing will potentially cause the release of dust.
  - When initially heating-up the furnace with the plastic film in place, the firing-up process can impact both the environment and the furnace atmosphere through the release of dust and vapours, which may adversely affect the quality of the end-product.
2. The second example (use of batten strips) similarly reduces the potential for fibrous dust release at the installation workplace as the amount of on-site cutting is significantly reduced.



*Picture of plain and encapsulated module*

For formed shapes and boards there are a number of ways to reduce potential fibrous dust release during installation:

- Defining size specifications for formed shapes with the producer to avoid any requirement to sand or otherwise process the shape at the installation site.
- Using a coated product (inorganic surface coating) to reduce fibre release during handling.

For small repairs to kilns and furnaces, a mastic (caulking) can be used to fill the recess in the kiln; this may also be easier to handle and require less processing than using blanket to make the repair.

For assembly operations, local exhaust ventilation cannot always be justified. There are a number of alternative approaches to reduce fibrous dust:

- A change in product form might help to reduce the likelihood and degree of dust exposure. For example, a gasket made of HTIW blanket might be replaced by one made of HTIW paper or felt, as the organic binder content in paper and felt can help to suppress fibrous dust release during handling.
- The use of a fully film encapsulated support mat for catalytic converters rather than a plain mat (as shown below) could be considered.



Alternative processing techniques can also help to reduce exposure levels.

As a general concept, wet processes are less dusty than dry processes, and machining involving less kinetic energy is easier to control with regard to dust generation. Some examples of alternative processes are shown below:

FINAL PRODUCT/ ACTIVITY	TYPICAL PROCESS	ALTERNATIVE PROCESS
Complex 3D shape	Machining (drilling, milling)	Vacuum forming, forming
Sized mat (blanket, paper, felt)	Sawing	Die cutting, water jet cutting
Sized board	Sawing	Water jet cutting
Precise shape	Machining: router, drill, saw	Automated, enclosed CNC
Packing dry boards	Manually adding to boxes/ pallets	Automated stacking/packing
Furnace repair	Filling gaps (caulking) using bulk wool/blanket	Pumpable/mouldable mastic