

## Man made mineral fibres – MMMFs

The terms ‘mineral wool’ and ‘man-made mineral fibre’ (MMMMF) generally refer to fibreglass, ceramic fibres and so called ‘rock’ or ‘stone wool’. MMMFs are made from natural or synthetic minerals. They are non-flammable and their most common practical uses are thermal insulation and soundproofing. The familiar ochre coloured MMMFs are usually available in 400mm rolls (or less commonly in panels), with a thickness of up to 200mm.

Nationwide energy saving activity has greatly increased the amount of MMMF being installed – or encountered - notably in domestic lofts and in cavity walls. Electricians and other trades are most likely to encounter MMMF when doing maintenance work close to - or amongst - the material. Increasing numbers of electricians also lay or re-lay MMMF insulation.

There is no scientific evidence that MMMFs present the same serious hazards to workers’ health as asbestos (see ‘*How do MMMF hazards compare to asbestos?*’ below). However, it is well known that skin contact with MMMF can cause irritation and that the material can contribute to ‘general’ airborne dust.

To help keep airborne dust and fibre levels down, mineral wools often contain oil and a binder, such as starch. Even so, MMMFs deteriorate with wear and tear into a ragged condition which, when disturbed, can generate some airborne dust. Temporary irritation with rhinitis (runny nose) may be caused by any dusty conditions, including MMMF dust, which is made up of relatively thick fibres that can irritate the upper respiratory tract. However, MMMF may be mixed up with other dusts and individuals may have different reactions to this dust, giving variable effects on health and wellbeing.

Skin irritation from MMMFs is usually due to itching when fibres pierce the skin, rather than a chemically-induced irritation. In the same way, MMMFs can also greatly irritate the eyes. However, resins in glass fibre/wool can occasionally cause contact eczema (dermatitis). If you develop a skin condition, advise your supervisor and seek medical advice about the problem.

### Good MMMF hygiene

Because mineral wool insulation can irritate the skin, eyes and throat it should be handled with care. To help prevent excessive MMMF dust or contact with the material, follow these handling tips:

- Cut the material with a safety knife or dedicated tool - do not use power tools. Avoid unnecessary handling of the unwrapped product.
- To help prevent ingestion and skin contact, do not eat or drink when working with or near MMMFs.
- Ensure there is adequate ventilation or use a suitable dust mask (a face mask meeting EN 149 (FFP1) is recommended when using lower hazard products in enclosed spaces or during dusty activities). Ensure your mask gives a good fit around your face.

- Eye protection: wear goggles, especially if you are working above your shoulders (EN 166 type)
- Hand protection: wear gloves to avoid itching (EN 388 type)
- Overall skin protection: cover exposed skin with suitable work clothes. Wear long sleeved/legged clothing or an overall to protect your skin. Tuck your shirt sleeves and trouser legs into the gloves and socks respectively.
- Cleaning up: use a vacuum cleaner or (and with the proximity of electrics in mind) dampen down with a water spray, prior to brushing up. Bag-up any waste before moving it elsewhere.
- If you are removing old MMMF from lofts or other work areas, ensure that the MMMF is properly bagged up, so you can move it without spreading MMMF to other areas.
- Throw away your disposable dust mask after use and wash overalls, gloves and other clothing separately from your normal clothes wash.

### First aid advice

In the event of:

- Inhalation: remove yourself from dust exposure. Rinse your throat and blow your nose to clear out the dust
- Skin contact: if mechanical irritation from MMMF occurs, remove the contaminated clothing and wash the affected skin gently with cold water and soap
- Eye contact: rinse your eye abundantly with water for at least 15 minutes
- Ingestion: drink plenty of water if MMMFs are ingested.

Report any significant exposure problems to your supervisor. Any such exposure should be noted. If you have an adverse reaction of continuing discomfort from any exposure to MMMFs, seek medical advice.

### How do MMMF hazards compare to asbestos?

Because MMMFs are used for insulation and, as their name suggests, they release airborne fibres, MMMFs are sometimes compared to asbestos. It is vitally important that everyone knows how to avoid exposure to asbestos fibres, which have long been associated with fatal diseases such as mesothelioma, lung cancer the pulmonary fibrosis (asbestosis). **However, there is no firm evidence that exposure to MMMFs leads to serious long-term health problems.** The dimension of an airborne fibre affects how likely it is to get in to the lung and the harm it can cause if it gets there. Asbestos and MMMF fibres are usually very different, and this may partly explain the difference in the toxicity between the materials. Relatively few MMMF fibres tend to reach the deep lung and even then, they tend not to persist there. Thus the bulk of MMMF products are believed to pose little respiratory health risk.

In 2002, the International Agency for Research on Cancer (IARC) looked at whether MMMFs cause cancer. It concluded that common fibre wools, including insulation glass wool, rock (stone) wool and slag wool are 'not classifiable as carcinogenic in humans'.

With this in mind, the HSE's airborne control limit for MMMFs is 5mg m<sup>-3</sup> of 'total' dust. Short duration home maintenance activities involving MMMF may generate fibre levels of around 0.01 to 1.0 f/ml, which are below the HSE's exposure limit. However, some superfine glass fibre materials are subject to a tougher exposure limit of just one fibre ml<sup>-1</sup> of air.

## **Industrial MMMFs**

Only the most 'bio-persistent' MMMFs (where the fibres don't break down in the airways or lungs) are classified by the IARC as 'possibly carcinogenic to humans' (so-called 'Group 2B' carcinogens). However, these materials are not normally used in building insulation. They include ceramic fibres used as insulation in high-temperature industrial environments such as blast furnaces, and some special-purpose glass wools.

If insulation wool is heated up for the first time, binder components and binder decomposition products can create an acrid odour. High concentrations can irritate the eyes and respiratory system, while fumes from fibre resins may cause a sensitisation rash. This means that dilution ventilation and/or local exhaust ventilation should be provided to control these fumes when high temperature appliances are first put into service.

## **Did you know that..?**

'Stone wool' is produced when molten rock at about 1600 degrees C has air or steam blown through it. One technique is based on applying molten rock to high-speed spinning wheels (similar to the production of 'candy floss'). The final product is a mass of fine, intertwined fibres with a diameter of around 6 to 10 micrometers.

There are two main types of mineral wool loft insulation:

1. Quilts – a combination of mineral wool and natural wool
2. Blown insulation – made of mineral wool and cellulose.

Risk and safety phrases that can be associated with mineral wools are:

- R38 – irritating to the skin
- R39 – Danger of very serious irreversible effects
- R40 – Possible risk of irreversible effects
- S36/37 – wear suitable protective clothing and gloves

Risk phrase R38 refers to mechanical irritation, not chemical irritation such as 'sensitization'. Even so, skin irritation and scratching can increase the risk of skin infection. Where rock (stone) wool and glass wool is bio-soluble, risk phrases R39 and R40 do not apply.

**ENDS**