

Fibreglass Dust:

The risks and how to stay safe

Fibreglass

Two components:

Glass Fibres...

A mix of (mainly) silica, limestone and soda ash
Heated to 1,371° C to form molten glass.

Molten glass then passes through spinning 'Bushings' or cylindrical sleeves, which form the fibrous lengths. A variety of processes can then be applied, according to the desired end product

...and Plastic Resin

A liquid polymer, mixed with a hardener, that 'cures' into a solid plastic



Fibreglass, or GRP (glass reinforced plastic), is an incredibly versatile material. Strong, light, non-conductive and easily moulded, fibreglass is used in construction for doors, roofs and ceiling tiles, insulation flat roofing laminates, canopies, tanks, architectural mouldings, and more besides.

It is built up of alternate layers of plastic resin and glass fibres. On their own the glass strands are strong but not stiff, and the resin is stiff but not strong. When fused together as the resin sets chemically, the result is a strong, stiff, and very durable material – but also one that needs handling with care.

Recognising the health hazards

Exposure to the dust created during the cutting and sanding of fibreglass is recognised as a **potential danger to health**. The use of power tools such as saws, grinders and sanders can create very high dust levels, especially if the work is in an enclosed or poorly-ventilated area, and the associated health risks are a priority for the Health and Safety Executive (HSE) in its dealings with the construction industry.

Workers can be unaware of the dangers that dust poses: there may even be complacency. Unlike the obvious risks of working in construction industry – such as falls – the dangers of dust exposure may not be immediately apparent, and some of the worst effects only become evident after long-term exposure.

Potential problems



Eyes: fibre dust particles can irritate the eyes, causing pain, watering and impaired vision.



Skin: complaints such as dermatitis can develop after sustained contact with the dust.



Lungs: chronic obstructive pulmonary disease, including bronchitis and emphysema.



Injury from explosion: in 2003, 7 workers were killed in a dust cloud explosion in a Kentucky fibreglass factory.

! WARNING

Fibreglass dust can create an explosion

What are the dangers?

The dust created during the cutting, grinding and sanding of fibreglass can affect the skin, eyes, upper respiratory system and lungs. There may be **immediate reaction to exposure**, resulting in irritation to the eyes, nose and throat, while prolonged contact with the skin can lead to dermatitis. The **long-term effects** of the inhalation of fibreglass dust particles include breathing difficulties, asthma and decreased lung function.



The glass fibres include silica as one of their components. A particle of silica dust is 100 times smaller than a grain of sand, so is easy to inhale and difficult for the body's natural defences to prevent penetrating deep into the lungs and causing permanent damage.

It is estimated that more than 1000 workers in the UK die each year from exposure to silica dust, including that emanating from fibreglass.

A further immediate risk to health is that of injury from explosions: any fine dust from a flammable material is prone to ignite easily, and **a concentration of fibreglass dust can ignite so fast that it creates an explosion.**

Although there is currently no specific work exposure limit (WEL) for fibreglass, government guidelines recommend that precautions are taken to prevent injury and health problems associated with fibreglass dust.

Protective measures

- ▶ Personal Protective Equipment (PPE)
- ▶ Industrial grade vacuum cleaners
- ▶ Instruction in use of safety equipment

Effective Dust Extraction

- ▶ Position the extraction system close to the source
- ▶ Use sufficient intake power for the levels of dust being generated
- ▶ Ensure sufficient extraction for the area being covered
- ▶ Establish negative air pressure to draw dust to the extraction and introduce fresh air whenever an entrance door to the area is opened
- ▶ Use a containment tent when appropriate to limit spread of dust

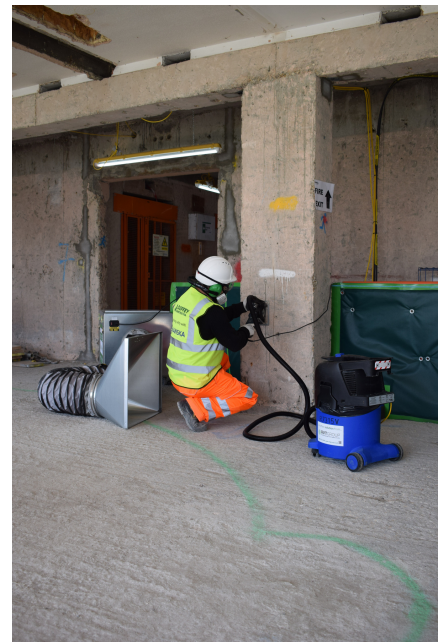
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Review and Control

To ensure the safety and health of employees engaged in cutting and sanding fibreglass, a carefully planned safety programme is essential. Risk assessments need to be undertaken to identify hazardous materials and processes, and preventive measures implemented. Procedures must be put in place for handling emergencies, and information about hazards made readily available. The effectiveness of safety measures should be monitored, and regular reviews undertaken.



The best way to combat fibreglass dust exposure is to manage the dust at source with **local exhaust ventilation** before it can get into the air breathed by the workers generating it. A capture hood placed close to the source of the dust and connected to an extractor fan and filter will extract harmful particles. Care should be taken when cleaning or replacing filters – non re-usable ones should be bagged before disposal.

Personal protective equipment offers a further line of defence. Safety goggles, gloves, face shields, respirators and dust masks are all useful, but should not be considered substitutes for dust extraction.

When clearing residual dust, **sweeping should be avoided** as it will only disturb the dust and make it more likely to be inhaled. Instead, dust should be collected with a **correctly-graded industrial vacuum cleaner**.

Last but not least, equipment used to control and counter fibreglass dust will work only if set up and used correctly. The training of workers in the use of the equipment is therefore essential to ensure its effectiveness.