

CONSTRUCTION DUST

The construction industry focuses largely on physical injuries, illness and ill health however the causes of occupational ill health have largely been ignored. One of the main contributors is dust of which there are many different types that are present on construction sites, and the exposure to working alongside dust throughout a wide variety of trades, which can have a negative impact on health if not controlled.

Dust is considered to be a silent killer as its impacts are not always acknowledged as being harmful by workers who are in regular contact with it. Within the industry 44% of construction workers think that very little priority into the control of construction dust and only 1 in 3 workers are provided with the correct extraction.

It is important that construction based trades are aware of the problem and health issues that can arise from long term exposure and that appropriate measures are taken to monitor, control and limit the exposure to dust wherever possible.

In Great Britain alone, there are over 500 deaths each year from silica related lung cancer, silicosis or Chronic Obstructive Pulmonary Disorder (COPD) and Asthma, which is triggered by large amounts of exposure to dust. Airborne dusts are the primary cause of non-asbestos related cancers in the construction industry meaning that dust is a large scale problem that needs to be addressed. Although there are many different types of dust and some can cause more harm than others, specific types such as wood dust are considered to be sensitisers.

The construction industry has one of the largest incident rates of occupational ill health, with 4% of workers each year suffering from an illness that they believe to be work-related. Construction dust does not just impact the user of the tool, but everyone who is on site and surrounding the workplace. Even if the person is not directly in contact with a tool that may produce it or within close vicinity of an area where a tool is producing dust, they can still be affected.

TYPES OF DUST

There are various different types of dust and different forms in which it can be produced, however the three main types commonly involved with construction are Silica Dust, Wood Dust and Lower Toxicity Dusts.

- Silica Dust - dust that is released when working with specific materials such as mortar, concrete and sandstone that consist of silica
- Wood Dust - dust that is produced when working alongside a range of wood materials such as plywood and MDF
- Lower Toxicity Dusts – created when working with materials with very low silica levels such as marble and limestone

EFFECTS

Workers exposed to dust regularly for a long period of time increase the likelihood of occupational ill health. Dust can also cause short term problems, both of which must be addressed to prevent it from becoming a larger problem. Each year over 500 construction workers lose their lives to lung cancer caused by silica dust which is equivalent to 10 people per week.

Dust is also seen as a trigger for a range of other health issues. Commonly this includes asthma, bronchitis, COPD, and silicosis.

Some health issues can develop during a short amount of time; however others can progressively deteriorate and develop over a longer period of times such as several years.

COSHH REGULATIONS

Legislation is put in to place to protect and regulate all workers; therefore construction based companies must ensure that they adhere to 'The Control of Substances Hazardous to Health Regulations 2002 (COSHH)'. COSHH provides guidance and cover for activities in which construction workers are exposed to different forms of dust. It is important that the risks from each type of dust are assessed, appropriate control measures are put into place where possible and that the controls are regularly reviewed to ensure that they are effective.

For a substance to fall under the COSHH regulations, it must be 'hazardous to health if it is hazardous in the form in which it may occur in the work activity. A substance hazardous to health does not necessarily have to be a chemical compound, as it caters for mixtures of compounds, micro-organisms, natural materials, such as stone or wood dust. Dust of any kind can also become a substance hazardous to health under COSHH when it is present at concentrations in the air equal to or greater than 10 mg/m³.

Under COSHH legislation, employers are required to carry out sufficient assessments prior to workers being exposed to all types of hazardous substances. By law, a suitable assessment of the risks to the workers' health created by the work that they will be carrying out needs to be assessed and appropriate control measures to be put into place. The main purpose of carrying out a risk assessment is to be able to identify the potential health risks of workers

The risk assessment should consider the specific works involved with the task, consider the hazards, the people exposed, the types and extent of the exposure, potential health effects, control measures and any other requirements (including maintenance, examination, exposure monitoring and health surveillance). The person who carries out the risk assessment must know how the work activity produces dust, be able to make sound decisions about the level of risk and the measures needed, and have the ability and authority of the employer to collate all the necessary, relevant information.

Once a risk assessment has been carried out, appropriate control measures must be put in to place before works can be carried out.

CONTROLLING DUST

To enable the exposure to dust to be reduced and minimised, on tool extraction should be used to prevent the user from being exposed to high volumes of dust. This is a control measure that is put into place to prevent the dust from being released into the air. Through the use of on tool extraction dust that is produced is removed to prevent it from being released into the air and surrounding work area.



On tool extraction refers to a system that is fitted and attached directly to the tool which is made up of three separate sections- the tool itself, capturing hood, extraction unit and tubing.

It is important that the correct extraction unit is used, either the M (medium) or H (high) class filter.

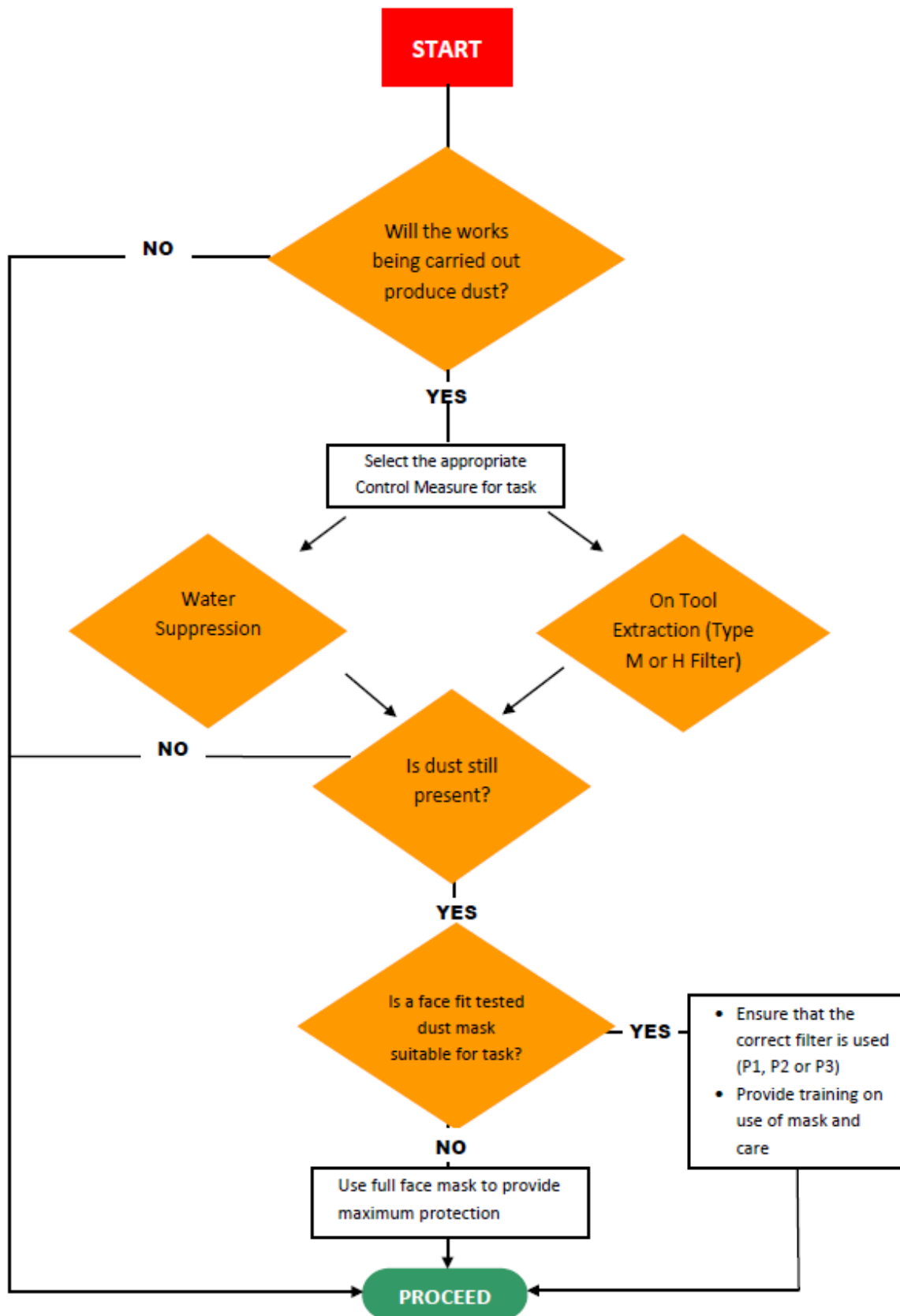


Labels and information are clearly displayed on the extraction to inform the user. Other forms of general vacuum must not be used to carry out on tool extraction.

The other method of controlling dust exposure is to use water to damp down dust clouds when they are produced. To use this method effectively water levels must be maintained throughout use at the correct level.



Although damping down and on tool extraction are the main methods of dust control, Respiratory Protective Equipment referred to as RPE is also a very commonly used method. RPE must be used when carrying out works involving dust; therefore the RPE that is being used must be adequate and relevant, considering the specified APF factor. The APF factor refers to the amount of protection that the RPE provides to the user, however the APF for dust based RPE is 20.



CONTROLLING DUST (CONTINUED)

RPE must be supplied and also be consistent with existing PPE and be fitted to the individual correctly. Face fit testing is required for dust masks such as the FFP3 mask as they have a tight seal which must be fitted correctly to the individual to enable them to work safely. This enables the mask to be worn correctly and provide the maximum amount of protection to the user and workers within the surrounding area. Workers using the FFP3 mask must also be clean shaven to provide them with further protection. Face fit testing must be carried out by a person who is adequately trained to do so.



Alongside specific control measures such as the use of masks, there are various other precautions and actions that can be taken to limit the exposure to dust where possible. They include:

- Wearing items of clothing that do not hold the dust
- Using screens and barriers to section off the area of work where the dust is present
- Limit the amount of time that each worker carries out the job to control individual exposure
- Control the number of people working in the vicinity of the dust
- Ensure that all workers are sufficiently trained to carry out the job
- Regular cleaning of the tools and equipment that are producing the dust
- Ensure that all users are aware of the emergency procedures to follow if needed
- Maintain work equipment carrying out thorough checks on all on tool extraction every 12 months

Table 2 – British Standards for Respiratory Protective Equipment

British Standard	Type of Respiratory Protective Equipment (RPE)	Hazards which the Respiratory Protective Equipment will protect against.	Class or Filter	Assigned Protection Factor
BS EN 149	Particle filters which cover the nose, mouth and chin	Only protects against dust particles NOT against gases or vapours.	FFP1	4
			FFP2	10
			FFP3	20
BS EN 405	Disposable half – mask that containing a gas filtering as well as a particle filtering element.	These masks can protect against dust particles and certain types and quantities of gases and vapours.	FFGasxP1	4
			FFGasxP2	10
			FFGasxP3	10
BS EN 140	Half mask cover the nose, mouth and chin. It is usually made of rubber or silicon and has replaceable filters.	The mask can be fitted with a series of replaceable filters to protect against dust hazards and gas hazards.	P1	4
			P2	10
			P3	20
			Gas	10
			Gas+P3	10
BS EN 136	Full mask covering all the face and is usually made of rubber or silicon and has replaceable filters.	The mask can be fitted with a series of replaceable filters to protect against dust hazards and gas hazards.	P2	10
			P3	40
			Gas	20
			Gas +P3	20
pr EN 12941	This is a positive pressure full face hood/helmet	This mask/helmet can be used to protect against dust particles and certain gases/vapour hazards.	TH 1	10
			TH 2	20
			TH 3	40
pr BS EN 12942	Power assisted full face mask respirator	This mask protects against both particulates and gases/vapour hazards. It is power assisted as if the power fails, the system will still filter the air reaching the worker.	TM 1	10
			TM 2	20
			TM 3	40

Reference: British standards for respiratory equipment

DUST PROCEDURE



All persons on site have a responsibility to look after their own health and that of others but all Sub-Contractors will be vetted to ensure that they have identified health hazards, assessed the risk, effectively managing the risks and applied the correct controls in place to minimise the exposure to harmful dusts to the lowest possible level

TASK	Powered Cutting	Powered Drilling	Powered Sanding	Grinding	Dry Brushing	Core Drilling	Miscellaneous
TRADE							
Soft Strip	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3	Using a hand-held breaker in enclosed spaces with limited ventilation - On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3			Damping down and using a brush, shovel and bucket for minor/small 'one-off' amounts Or for regular removal/site cleaning: • Water spray for damping down • Rake, shovel and bucket/ wheelbarrow to remove larger pieces • Covered chutes and skips where needed • Vacuum attachments fitted to an H or M Class extraction unit • RPE with an APF of 20/ FFP3		Use water suppression or on-tool extraction for those tasks where it is possible and RPE with an APF of 20 – consider powered RPE for longer duration work. Enclosed spaces may also need general mechanical ventilation to remove dusty air
Demolition	Bursting, crushing, cutting, sawing or other techniques Remote controlled demolition Hydro-demolition Water spray for damping down On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3	Bursting, crushing, cutting, sawing or other techniques Remote controlled demolition Hydro-demolition Water spray for damping down On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3					

TASK	Powered Cutting	Powered Drilling	Powered Sanding	Grinding	Dry Brushing	Core Drilling	Miscellaneous
TRADE							
Groundworker	Kerbs/ Blocks - Disc Cutter Use dust suppression Face fitted FFP3/ APF20 dust mask	Using a hand-held breaker in enclosed spaces with limited ventilation - On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3					Mixing cementitious materials externally - Face Fitted RPE with an APF of 20/ FFP3
Bricklayer		Hammer Drills Class 'H' or 'M' On-tool extraction Face fitted FFP3 dust mask		Repointing abrasive wheel - On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3			Mixing cementitious materials externally - Face Fitted RPE with an APF of 20/ FFP3
Joiner	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3					
Roofer	Tiles - Disc Cutter Use dust suppression Face fitted FFP3/ APF20 dust mask			Bitumen roofing material - On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3			Mixing cementitious materials externally - Face Fitted RPE with an APF of 20/ FFP3
Electrician	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3		Chasing - On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3			

Plumber	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3		Chasing - On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3		Water suppression or On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3	
Plasterer			On-tool extraction using an H, M, or L Class extraction unit				Mixing cementitious materials externally - Face Fitted RPE with an APF of 20/ FFP3
Floor Layer							Mixing cementitious screed materials - Face Fitted RPE with an APF of 20/ FFP3
Painter			On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3				
Fencer	Posts/ Gravel boards - Disc Cutter Use dust suppression Face fitted FFP3/ APF20 dust mask						
Labourer					Damping down and using a brush, shovel and bucket for minor/small 'one-off' amounts Or for regular removal/site cleaning: • Water spray for damping down • Rake, shovel and bucket/ wheelbarrow to remove larger pieces • Covered chutes and		Mixing cementitious screed materials - Face Fitted RPE with an APF of 20/ FFP3

					skips where needed • Vacuum attachments fitted to an H or M Class extraction unit • RPE with an APF of 20/ FFP3		
Kitchen/ Furniture Fitters	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3	On-tool extraction using an H or M Class extraction unit and Face Fitted RPE with an APF of 20/ FFP3				