

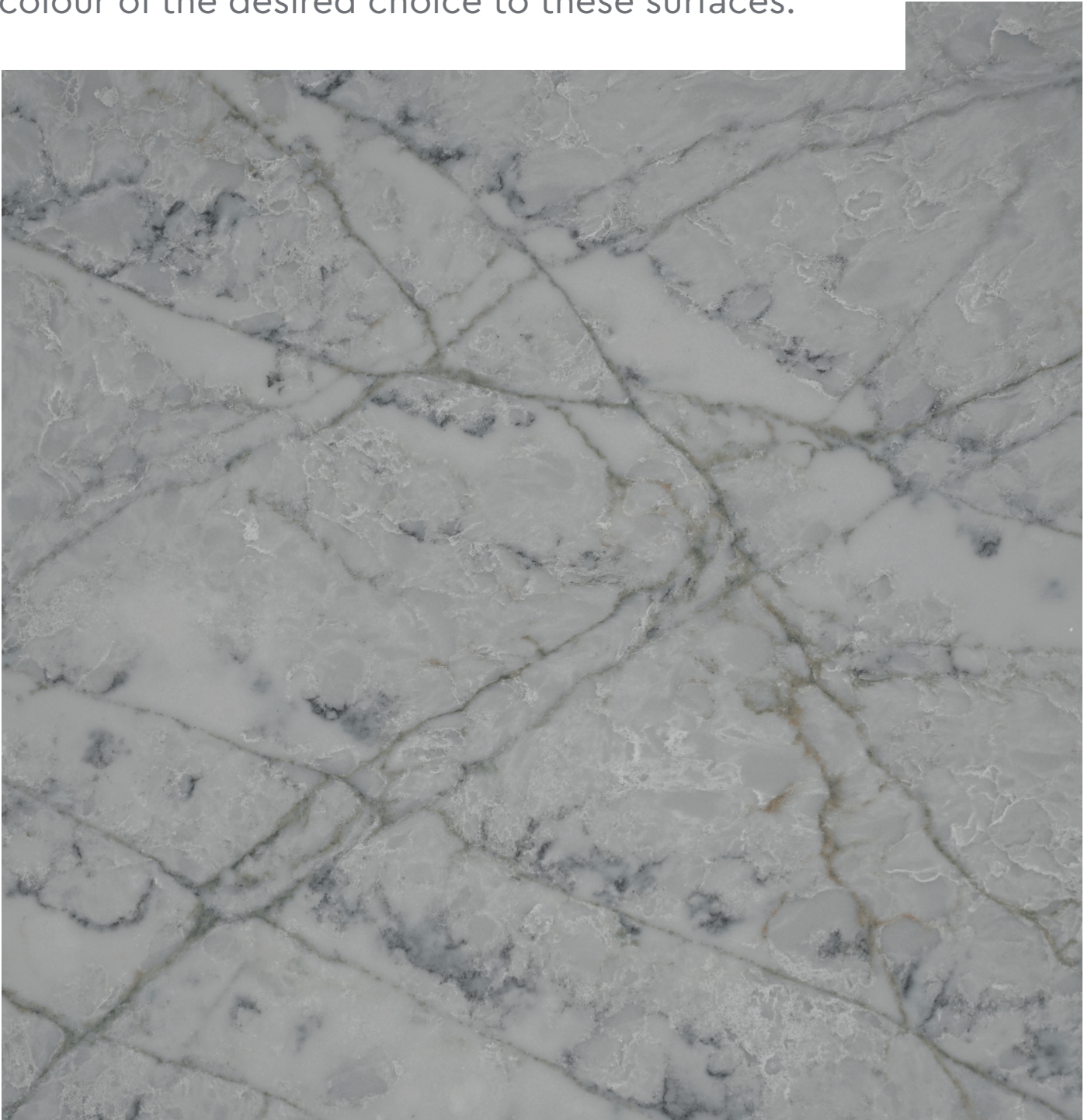


Safe Working Practices

For Working with Respirable Crystalline Silica (RCS)

What is Quartz?

Quartz countertops are engineered and consist of 85- 93% quartz and 7-15% of Unsaturated Polyester Resin. Pigments are used to provide the colour of the desired choice to these surfaces.





What is Silica?

Silica is a natural substance found in most rocks, sand and clay and in products such as bricks and concrete. In the workplace these materials create dust when they are cut, sanded, carved etc. Some of this dust may be fine enough to breathe deeply into the lungs and cause harm to health. The fine dust is called respirable crystalline silica (RCS) and is too fine to see with normal lighting.

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In its solid form engineered stone does not have hazardous properties. It is the dust that is generated during fabrication that has the potential to cause harm if inhaled.”

Risks associated with respirable crystalline silica (RCS)

In its solid form engineered stone does not have hazardous properties. It is the dust that is generated during fabrication that has the potential to cause harm if inhaled.



By breathing in RCS, you could develop the following lung diseases:

Silicosis: Silicosis is a lung disease caused by inhaling respirable crystalline silica (RCS). It results in a hardening or scarring (fibrosis) of the lung tissue with loss of lung function. It usually develops after at least 10 years of RCS exposure, with there being no symptoms initially and the changes in the lungs being found on X-ray.

Chronic obstructive pulmonary disease (COPD): COPD is a group of lung diseases, including bronchitis and emphysema, resulting in severe breathlessness, prolonged coughing and chronic disability. It may be caused by breathing in any fine dusts, including RCS. It can be very disabling and is a leading cause of death. Cigarette smoking can make it worse.

Lung cancer: Heavy and prolonged exposure to RCS can cause lung cancer. When someone already has silicosis, there is an increased risk of lung cancer.



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The health risks from RCS are almost entirely preventable when exposure to dust is adequately controlled – you do not need to become ill through work activities.”

Responsibilities of employers

Employers must comply with the control of substances hazardous to health regulations (COSHH) and other health and safety regulations related to the workplace.

These include;

- Preventing or controlling exposure to Respirable Crystalline Silica (RCS) - For RCS, control measures must keep the exposure below the Workplace Exposure Limit (WEL) of $0.1\text{mg}/\text{m}^3$ respirable dust, averaged over 8 hours.
- Work with stone containing the lowest crystalline silica content.
- Ensure water suppression is used at all times.
- Where necessary providing Personal Protective Equipment (PPE), including Respiratory Protective Equipment (RPE). Half Face Masks or Powered Respirators should be worn depending on the individual wearer; the tasks they are doing and the environment in which they are working. Make sure that the respirator meets the required legal performance standards and carries a UKCA or CE marking.
- Maintain all equipment used as a control measure.
- Train employees to use equipment properly and inform them of the health risks.



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Employers should ensure that the exposure of employee to substances hazardous to health is prevented, or where this is not reasonably practicable, adequately controlled.”





Control methods

A combination of controls is likely to be the most effective at reducing airborne RCS.



Ensure the use of water suppression whilst grinding and cutting to reduce the level of RCS in the atmosphere



Local Exhaust Ventilation will remove the RCS at source. Dust removal systems in the workplace reduce the levels of RCS in the atmosphere



Where possible segregate activities that have the potential to generate airborne RCS from the rest of the workplace



Ensure regular housekeeping and cleaning of the workplace and work clothing



Use adequate Personal Protective Equipment (PPE) especially Respiratory Protective Equipment (RPE)



Ensure PPE is suitable for purpose, worn correctly and regularly checked. Employees should be trained on the fitting and use of all PPE



Employees should be made aware and trained on the risks associated with RCS exposure and the methods of prevention



Workplace procedures should be in place to ensure workers are correctly adhering to the control methods



Exposure monitoring should be carried out regularly to ensure the effectiveness of the control methods

Cutting and polishing engineered stone using powered hand-held rotary tools

Control approach 2: Engineering controls and Respiratory protective equipment (RPE)



What this sheet covers

This sheet describes good control practice for respirable crystalline silica (RCS) dust from cutting, grinding and polishing of engineered stone using powered hand-held rotary tools. Working stone using automated rotary tools is covered in sheet ST2 (see Essential information).

Engineered stone is artificial stone manufactured using crushed natural stone or minerals bonded together with resin.

Follow the good control practice described in this sheet to reduce exposure to below the relevant workplace exposure limits (WELs).

Main points

- Work with stone containing the lowest crystalline silica content to reduce health risks for all workers.
- Use on-tool water suppression.
- Control the mist generated by water suppression because it contains crystalline silica.
- Use powered air purifying respirators (PAPR) with an assigned protection factor (APF) of at least 20 when processing, cleaning or when maintaining machinery.
- Regularly review your control measures to check that they are still effective.
- Provide health surveillance for workers if they are regularly exposed to RCS dust and there is a reasonable likelihood that

chronic obstructive pulmonary disease (COPD) and/or silicosis may develop.

- Clean the work area regularly. Dust from surfaces or work clothing can be a significant source of exposure.

Hazards

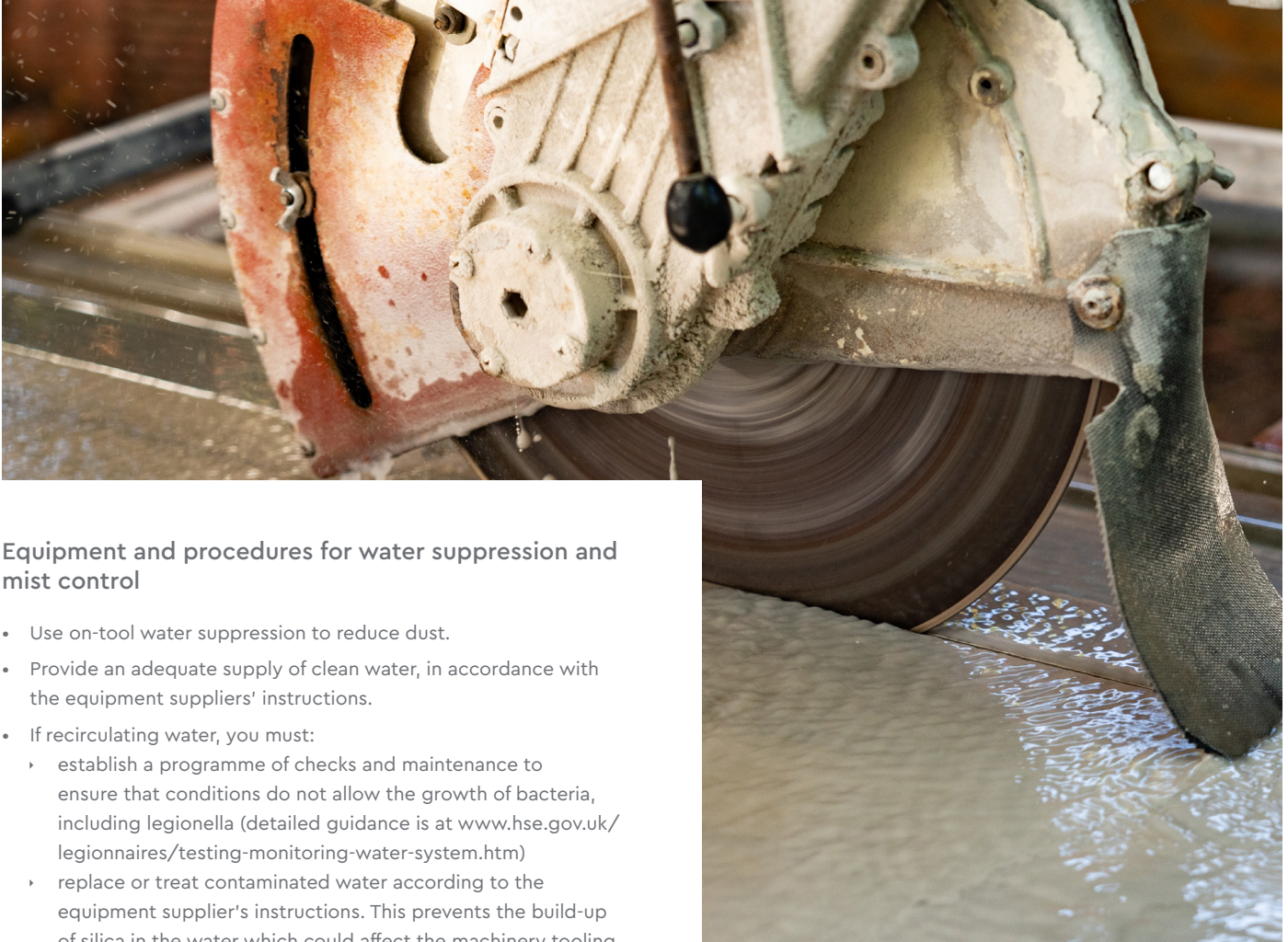
RCS is fine enough to reach deep inside the lungs. It can cause irreversible lung damage, silicosis, chronic obstructive pulmonary disease (COPD) and lung cancer.

Damage to health may be done before any symptoms develop. Silicosis can continue to worsen even after exposure to RCS stops. Wet working can cause dermatitis. RCS is also abrasive and drying when in contact with skin.

Organisation of work area

- ✓ Segregate tasks which create dust and mist to reduce spreading of airborne contamination to other workers.
- ✓ Only allow access to authorised and appropriately trained people.
- ✓ Slope floors gently towards gulleys, where possible, to help slurry drain.
- ✓ Avoid gulleys flowing through clean areas; slurry can dry out and lead to dust becoming airborne.

Source: HSE Health and Safety Executive ST3A COSHH essentials for stone workers: Silica



Equipment and procedures for water suppression and mist control

- Use on-tool water suppression to reduce dust.
- Provide an adequate supply of clean water, in accordance with the equipment suppliers' instructions.
- If recirculating water, you must:
 - › establish a programme of checks and maintenance to ensure that conditions do not allow the growth of bacteria, including legionella (detailed guidance is at www.hse.gov.uk/legionnaires/testing-monitoring-water-system.htm)
 - › replace or treat contaminated water according to the equipment supplier's instructions. This prevents the build-up of silica in the water which could affect the machinery tooling, increasing the need for maintenance, and the effectiveness of the water suppression.
- Work within a partially enclosed and externally vented local exhaust ventilation (LEV) booth to control mist, for example a water wall LEV booth. This will reduce the spread of crystalline silica beyond the work area. Design your system to extract wet mist.
- Provide mechanical ventilation to prevent the build-up of mist.

Respiratory protective equipment (RPE)

- Provide powered air purifying respirators (PAPR) or other equivalent positive pressure RPE (sheets R3 and R4 in Essential information).
- Make sure workers are trained on how to check RPE is working properly before every use, how to fit it properly and how to look after it.
- Change the filters on respirators in accordance with the manufacturer's recommendations.
- Change the filters on respirators if:
 - › the shelf-life expiry date has passed
 - › they look damaged or contaminated
 - › they become harder to breathe through
- Keep RPE clean and store it in a clean place.
- Test and examine reusable RPE at least once a month, and carry out any maintenance. If the RPE is only used occasionally, make sure an examination and test is done before use. Never exceed 3-month intervals for checks and maintenance.
- Make sure workers wearing tight-fitting RPE are clean shaven and face fit tested (see INDG479 in Essential information).

Personal protective equipment (PPE)

- Do not allow workers to wear their own outer clothing in contaminated areas.
- Provide coveralls that do not retain dust – synthetic rather than cotton. If exposure to the mist is likely, then the coveralls should also provide water protection.
- Consult workers to ensure PPE is suitable for them.
- Make suitable arrangements for maintenance, separate storage and replacement of PPE.
- Use a contract laundry or a suitable equivalent to wash work clothing.
- Warn them that the dust contains silica. Do not allow workers to launder work clothing at home.
- Provide suitable footwear for working in a wet floor area.
- Provide protective gloves suitable for contact with crystalline silica.

Personal decontamination.

- Do not allow eating, drinking or smoking in contaminated areas.
- Provide warm water, mild skin cleansers, and soft paper or fabric towels for drying. Avoid abrasive cleansers.
- Provide pre-work skin creams, which will make it easier to wash dirt from the skin.
- Provide after-work creams to replenish skin oils.
- Do not rely on barrier creams; they are not 'liquid gloves' and they do not provide a full barrier.

Maintenance, examination and testing

- Plan regular maintenance of equipment; it can wear out quickly as silica-containing dusts are abrasive.
- Clean down equipment before starting maintenance; use wet or dustless methods.
- Keep all equipment in working order. Maintain it as advised by the supplier or installer.
- Check for signs of damage to control equipment before starting work.
- Make sure that on-tool water suppression systems work properly before using the tool.
- Make sure that mist control systems work properly before use.
- Air sampling may be needed to show that control of exposure to dust and mist is being maintained (see G409 in Essential information).

Cleaning and housekeeping

- Clean work equipment and the work area daily. Clean other equipment and the workroom regularly - at least once a week.
- Vacuum dry dust or use wet cleaning methods.
- Use vacuum equipment that meets at least Class M (medium hazard) classification.
- Clear up slurry and dispose of it safely.
- Do not use brushes or compressed air for removing dust from clothing, surfaces and machinery.

- Do not disturb dried dust from overspray or slurry. Dust from surfaces or work clothing can be a significant source of exposure.
- Clean regularly. No dry brushing.
- Provide coveralls. These must be removed safely before removing RPE. Do not leave the workplace wearing PPE, to prevent taking the dust home.

Health surveillance

- Provide health surveillance (see G403 and G404 in Essential information).
- You must consider other health effects such as hand-arm vibration, dermatitis and noise-induced hearing loss.
- Take advice from a competent occupational health professional (a doctor or nurse) to set up and run a health surveillance programme.



Training and supervision

- Tell workers about the hazards associated with their work and how to recognise early signs of lung damage from exposure to RCS.
- Provide workers with training on:
 - › when and how to use controls
 - › how to check controls are working
 - › what to do if something goes wrong
- Provide supervision to make sure that controls are used and safe work procedures are followed.
- Involve managers and supervisors in health and safety training.
- Keeping training records is helpful to demonstrate what information, instruction and training have been provided.

Essential information

- Control of exposure to silica dust - A guide for employees INDG463 <https://www.hse.gov.uk/pubns/guidance/indg463.htm>
- Guidance on respiratory protective equipment (RPE) fit testing INDG479 (www.hse.gov.uk/pubns/indg479.htm)

Stoneworkers COSHH Essentials:

- All available at www.hse.gov.uk/coshh/essentials/direct-advice/stonemasons.htm

RPE COSHH Essentials:

- R3 UK Standard Assigned Protection Factor 20
- R4 UK Standard Assigned Protection Factor 40

Both available at www.hse.gov.uk/coshh/essentials/direct-advice/respiratory-protective-equipment.htm

Further information

Controlling exposure to stone dust, HSG201.

<https://www.hse.gov.uk/pubns/books/hsg201.htm>

G406 - New and existing engineering control systems.

<https://www.hse.gov.uk/pubns/guidance/g406.pdf>

Respiratory protective equipment at work - A practical guide, HSG53, <https://www.hse.gov.uk/pubns/books/hsg53.htm>

Health surveillance for those exposed to respirable crystalline silica (RCS) - Guidance for occupational health professionals.

<http://www.hse.gov.uk/pubns/priced/healthsurveillance.pdf>

The dust lamp: A simple tool for observing the presence of airborne particles MDHS82.

<https://www.hse.gov.uk/pubns/mdhs/pdfs/mdhs82-2.pdf>

Control of substances hazardous to health: The Control of Substances Hazardous to Health Regulations 2002. Approved Code of Practice and guidance L5 (Sixth edition) HSE 2013

<https://www.hse.gov.uk/pubns/books/l5.htm>

Information on health and safety for stoneworking in the stone manufacturing and construction industries: The Health and Safety Executive at <http://www.hse.gov.uk/stonemasonry/index.htm>



General guidance COSHH Essentials:

- G403 Health surveillance for occupational dermatitis
- G404 Health surveillance for those exposed to respirable crystalline silica
- G409 Exposure measurement: Air sampling

All available at www.hse.gov.uk/pubns/guidance/gseries.htm

Stone Federation at

<http://www.stonefed.org.uk>

Worktop Fabricators Federation

<https://www.worktopfabricators.org/>

British Occupational Hygiene Society (BOHS) Directory of Occupational Hygiene Services at

<https://www.bohs.org/information-guidance/>

Institute of Local Exhaust Ventilation Engineers Accredited members

<https://www.cibse.org/get-involved/societies/institute-of-localexhaust-ventilation-engineers-ileve>

For information about health and safety visit

<https://books.hse.gov.uk> or <http://www.hse.gov.uk>

You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This document is available at:

www.hse.gov.uk/pubns/guidance/st3a.pdf

Source: HSE Health and Safety Executive ST3A COSHH essentials for stone workers: Silica

This document serves as a general guide. It is essential to comply with all applicable local safety measures, laws, regulations, and standards. Employers are specifically required to adhere to the Control of Substances Hazardous to Health Regulations 2002 (COSHH) (as amended).



Further information:

[hse.gov.uk](https://www.hse.gov.uk)

[Silicosis \(HSE\)](#)

[Control of exposure to silica dust](#)

[Silicosis \(NHS\)](#)

[Controlling airborne contaminants at work: A guide to local exhaust ventilation \(LEV\)](#)

[ST30](#)

[Working engineered stone: Control silica risk - HSE](#)

[Guidance on respiratory protective equipment](#)

[Risks when working with Engineered Stone](#)

[Respiratory protective equipment at work: A practical guide](#)

[Control of substances hazardous to health \(Sixth edition\)](#)

[Stone Federation Great Britain](#)

[Stoneworkers](#)

[Quarries Partnership Team](#)