

# ST2

COSHH essentials for stone workers: Silica

## Automated boring and polishing using rotary tools

### Control approach 2 Engineering control and Respiratory protective equipment (RPE)

**The Control of Substances Hazardous to Health Regulations 2002 (COSHH) require employers to ensure that exposure is prevented or, where this is not reasonably practicable, adequately controlled. This guidance gives practical advice on how this can be achieved by applying the principles of good practice for the control of exposure to substances hazardous to health, as required by COSHH.**

**It is aimed at people whose responsibilities include the management of substances hazardous to health at work (eg. occupational health specialists, anyone undertaking COSHH assessments and supervisors). It is also useful for trade union and employee safety representatives. It will help you carry out COSHH assessments, review existing assessments, deliver training and supervise activities involving substances hazardous to health.**

**This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance, you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.**

**See Essential information near the end of the sheet.**

#### What this sheet covers

This sheet describes good control practice for Respirable Crystalline Silica (RCS) dust from the automated boring and polishing of stone using rotary tools. Manual working of stone using rotary tools is covered in Sheet ST3.

It covers the key points you need to follow to reduce exposure to an adequate level.

Follow all the points, or use equally effective measures.

#### Main points

- Boring and polishing stone using rotary tools can create high levels of dust containing RCS.
- The content of RCS in the dust depends on the crystalline silica content present in the stone (see sheet ST0).
- Water suppression will normally be required and the mist generated needs to be controlled.
- Contaminated work clothing may also be a source of dust exposure.
- Air sampling may be needed to show that control of exposure to RCS is being maintained.
- Provide health surveillance when workers are regularly exposed to RCS dust and there is a reasonable likelihood that silicosis may develop.

#### Hazards

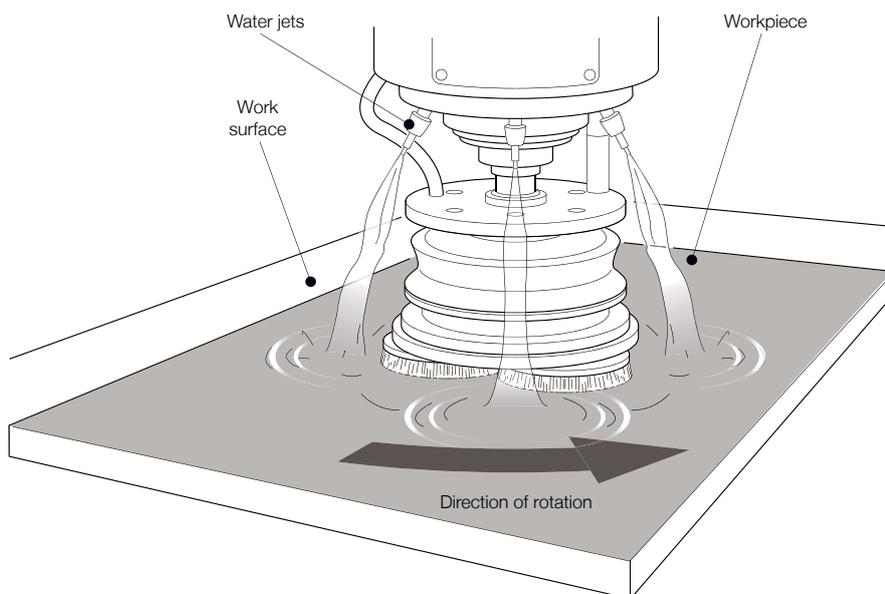
- ✓ RCS is also known as alpha-quartz, cristobalite or 'free silica', and can be wrongly labelled as 'amorphous silica'.
- ✓ RCS is hazardous by inhalation as the 'respirable' dust, which is very fine and invisible under normal lighting, can get deep into the lungs.
- ✓ The workplace exposure limit for RCS is detailed in HSE publication EH40/2005 Workplace Exposure Limits: [www.hse.gov.uk/pubns/priced/eh40.pdf](http://www.hse.gov.uk/pubns/priced/eh40.pdf).
- ✓ Inhaling RCS can lead to:
  - Silicosis, which is a serious and irreversible lung disease that can cause permanent disablement and early death. There is an increased risk of lung cancer in workers who have silicosis.
  - Chronic obstructive pulmonary disease (COPD), which is a group of lung diseases, including bronchitis and emphysema, that results in severe breathlessness, prolonged coughing, chronic disability and can lead to death. The risk of COPD is increased by smoking.
- ✓ RCS dust is also abrasive and drying when in contact with skin, and can lead to contact dermatitis. Wet working can also lead to dermatitis.
- ✓ Dried slurry can, if disturbed, produce airborne dust which may be hazardous by inhalation.

### Access to work area

- ✓ Allow access to authorised and appropriately trained people only.
- ✓ Segregate this task as far as possible to reduce spreading of airborne contamination to other workers.
- ✓ Locate the controls away from the machinery to reduce the need to access the area.
- ✓ Where possible slope floors gently towards gulleys to help drainage of water from use of water suppression and/or wet washing.
- ✓ Gulleys should not flow through clean areas, as there is a risk of the slurry drying out and dust becoming airborne.

### Equipment and procedures

- ✓ Use water suppression to reduce dust emissions.
- ✓ Check that there is adequate water for dust suppression.
- ✓ Apply water near the point of processing to limit the generation of mist containing crystalline silica.



### Respiratory protective equipment (RPE)

- ✓ RPE is normally needed for any work carried out near the operating machinery where exposure to the mist can occur.
- ✓ RPE may be needed for maintenance and cleaning.
- ✓ Provide RPE with an assigned protection factor (APF) of at least 20 (see sheet R3).
- ✓ Fit testing is required for RPE with a tight-fitting face seal.
- ✓ Workers wearing tight-fitting RPE must be clean shaven and trained how to fit it properly and look after it.
- ✓ If RPE is required for extended periods, eg. longer than one hour, use powered respirators or constant flow airline breathing apparatus.

- ✓ Change the filters on respirators in accordance with manufacturer's recommendations and if:
  - The shelf-life expiry date has passed
  - They are damaged or visibly contaminated
  - They become harder to breathe through.
- ✓ Air supplied to breathing apparatus should meet minimum quality requirements, in line with the latest British standard.
- ✓ Make suitable arrangements for maintenance, storage and replacement of RPE.
- ✓ Train workers to use RPE properly and look after it.
- ✓ Tell workers to check RPE is working properly before every use.
- ✓ Examine and test non-disposable RPE thoroughly at least once every month and record this.

- ✓ Position brushes/curtains around the rotary tool, where possible, to control the spread of any mist.
- ✓ Keep surfaces clean and never let stone slurry dry out.
- ✓ If water is recirculated, establish a program of checks and maintenance to ensure that conditions do not allow the growth of bacteria, including legionella.
- ✓ Enclose the process, as far as reasonably practicable, to contain any mist generated.
- ✓ Consider whether the mist can be effectively extracted by local exhaust ventilation.
- ✓ Ensure that workers remain at a distance, or use RPE, if they need to approach the rotary tool when in operation.

#### Personal protective equipment (PPE)

- ✓ Ask your supplier to advise on suitable PPE.
- ✓ Provide storage for PPE to prevent damage or contamination when not in use.
- ✓ Use a contract laundry or a suitable equivalent to wash work clothing. Don't allow workers to do this at home. Warn them that the dust contains silica.
- ✓ Provide coveralls that do not retain dust – synthetic rather than cotton.
- ✓ Provide protective gloves suitable for wet working and contact with crystalline silica.
- ✓ Provide suitable footwear for working in a wet floor area.

#### Personal decontamination and skin care

- ✓ 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.

**Caution: 'Barrier creams' are not 'liquid gloves' and they do not provide a full barrier.**

### Maintenance, examination and testing

- ✓ Minerals and silica-containing dusts are very abrasive. Plan regular maintenance.
- ✓ Keep all equipment used for the task in effective working order. Maintain it as advised by the supplier or installer.
- ✓ Clean down the equipment before starting maintenance – use wet or dustless methods.
- ✓ Check that the water suppression system works properly before use. If faulty, stop work until it is repaired, or other equally effective control measures can be implemented.
- ✓ Make sure the water suppression is positioned and used correctly.
- ✓ Several measures are available to check effectiveness of controls. These range from simple qualitative (eg. use of a dust lamp) to complex quantitative techniques (eg. air sampling) - usually for higher-risk scenarios.

### 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 dust Class M (medium hazard) classification to remove dust.
- ✓ Clear up sludge and dispose of it safely.

**Caution: Never allow the use of brushes or compressed air for removing dust from skin and clothing. Avoid the use of brushes or compressed air for removing dust from surfaces or from inside machinery.**

### Health surveillance

- ✓ Provide health surveillance for silicosis where there is a reasonable likelihood that silicosis may occur in your workplace. See sheet G404.
- ✓ Provide health surveillance for dermatitis where there is a reasonable likelihood that dermatitis may occur in your workplace. See sheet G403.

### 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 operating the equipment and using the control measures correctly, and to report any faults immediately.
- ✓ Provide supervision – ensure that safe work procedures are followed.
- ✓ Involve managers and supervisors in health and safety training.
- ✓ Training records are helpful to demonstrate training has taken place.

### Essential information

G401 – Health monitoring for chronic obstructive pulmonary disease.

G403 – Health surveillance for occupational contact dermatitis (OCD).

G404 – Health surveillance for silicosis.

G406 – New and existing engineering control systems.

G409 – Exposure measurement: Air sampling.

### Employee checklist

- Are you sure about safe work procedures?
- Is the equipment in good condition and working properly?
- Is the water suppression working?
- Look for signs of leaks, wear and damage before every job.
- If you find any problems, tell your supervisor. Don't just carry on working.
- Make suggestions to improve the effectiveness of control.
- Co-operate with health surveillance.
- Use, maintain and store your PPE in accordance with instructions.
- Wash hands before eating, drinking, smoking, using the lavatory and after work.

R3 – Respiratory Protective Equipment, UK Standard Assigned Protection Factor 20 (APF 20).

ST0 – Advice for managers.

ST3 – Cutting and polishing using hand-held rotary tools.

### Further information

You can find the full COSHH essentials series at [www.hse.gov.uk/coshh/index.htm](http://www.hse.gov.uk/coshh/index.htm)

Occupational Safety and Health Consultants Register at <http://www.oshcr.org/>

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

G-series: General Guidance COSHH Essentials sheets at <http://www.hse.gov.uk/pubns/guidance/gseries.htm>

Information on health and safety for stone working in the stone manufacturing and construction industries can be obtained from:

The Health and Safety Executive at <http://www.hse.gov.uk/stonemasonry/index.htm>

Stone Federation at <http://www.stonefed.org.uk/>

Quarry Partnership Team (QPT) at <http://www.safequarry.com/qpt.aspx>

Construction Dust Partnership (CDP) at <http://www.citb.co.uk/health-safety-and-other-topics/health-safety/construction-dust-partnership/>

Information on assessing whether legionella is a risk can be found at <http://www.hse.gov.uk/legionnaires/other-risk-systems.htm>

For information about health and safety visit <https://books.hse.gov.uk> or <http://www.hse.gov.uk>.

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