

CR1

COSHH essentials in ceramics: Silica



This information will help employers (including the self-employed) comply with the Control of Substances Hazardous to Health

Regulations 2002 (COSHH), as amended, to control exposure to respirable crystalline silica (RCS) and protect workers' health.

It is also useful for trade union safety representatives.

This sheet describes good practice using RPE and dust extraction.

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

It is important to follow all the points, or use equally effective measures.

Lead glazes have special provisions. Seek expert advice - see 'Useful links'.

Main points

- High dust levels result from carrying, opening and tipping or scooping glaze and colour powders.
- Contaminated work clothing may also be a source of dust exposure.
- Keep exposure as low as possible using all the controls in this sheet. Make sure the controls work.
- You need air sampling. See sheet G409.
- Health surveillance is usually needed. See sheet G404.

Glaze and colour preparation

Control approach R

Respiratory protective equipment (RPE)

Hazard

- ✓ Ceramics work can produce airborne respirable crystalline silica (RCS).
- ✓ All RCS is hazardous, causing silicosis. This is a serious lung disease causing permanent disability and early death.
- ✓ Silicosis is made worse by smoking.
- ✓ 'Respirable' means that the dust can get to the deepest parts of the lung. Such fine dust is invisible under normal lighting.
- ✓ Keep inhalation of RCS as low as possible.
- ✓ When all controls are applied properly, less than 0.1 mg/m³ RCS is usually achievable (based on an 8-hour time-weighted average).

Crystalline silica concentrations in common materials

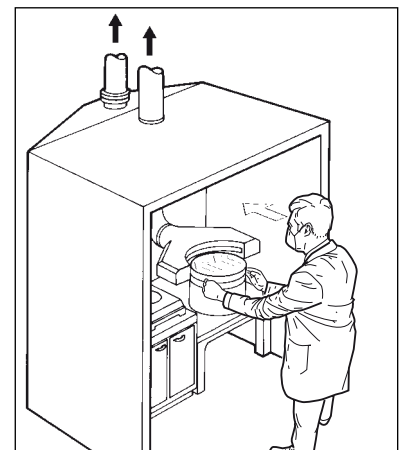
- ✓ See table in sheet CR0.

Access and premises

- ✓ Only allow access to authorised staff.

Equipment

- ✓ RPE is normally needed.
- ✓ Can you buy in glaze ready for use, or arrange bulk delivery to a silo, or in an FIBC?
- ✓ Enclose the operation as much as possible – see illustration.
- ✓ Make the enclosure big enough to contain the materials and equipment, and provide plastic strips to reduce the open area.
- ✓ Locate the booth away from doors, windows and walkways to stop draughts interfering with the extraction.
- ✓ You need an inward air speed between 1 and 1.5 metres per second at the face of a cross-draught booth.
- ✓ Fit a manometer or pressure gauge near the extraction point, to show that the system is working properly.
- ✓ Mark the acceptable range of readings.
- ✓ Discharge cleaned, extracted air to a safe place outside, away from doors, windows and air inlets.
- ✓ Have a supply of clean air coming into the workroom to replace extracted air.



Store and prepare colours and glazes in a booth with an inward air speed of 1 to 1.5 metres per second

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- ✓ Fit an indicator or alarm to show if filters have blocked or failed.
 - ✓ Consult a qualified ventilation engineer to design new control systems or to update current controls. See sheet G406.

Procedures

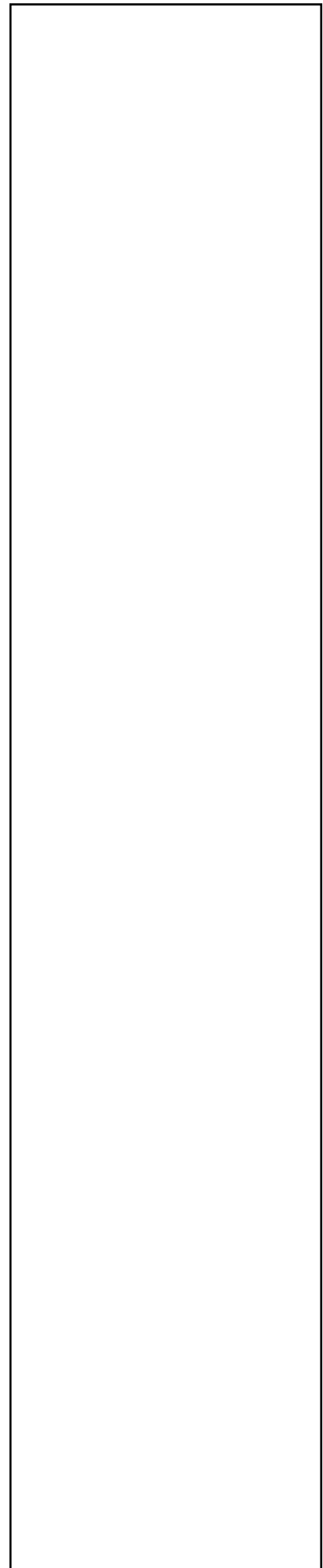
- ✓ Always confirm that the dust extraction is turned on and working before starting work.
- ✓ Make sure that workers check that their RPE works properly every time they put it on.
- ✓ Tip gently from bags. Roll up empty bags with the open end close to the extraction point, then put them in a bag collector.
- ✓ Clean air pre-filters daily, or follow the manufacturer's advice.

Special care

- ✓ Sacks are often contaminated with dust on the outside, which is disturbed by handling.
- ✓ Other ingredients in glaze mixes (eg lead) need separate assessment.
- ✓ Remember that drips and spills that dry off are a source of dust.

Maintenance, examination and testing

- ✓ Minerals and silica-containing dusts are very abrasive. Plan regular maintenance.
- ✓ Follow instructions in maintenance manuals - keep equipment in effective and efficient working order.
- ✓ If the dust extraction is faulty, stop work until it is repaired.
- ✓ Clean down the equipment for maintenance - use wet or dustless methods.
- ✓ Daily, look for signs of damage. Noisy or vibrating fans can indicate a problem.
- ✓ At least once a week, check that the dust extraction system and gauges work properly.
- ✓ You need to keep all controls in good working order. See sheet G406.
- ✓ You need to know the manufacturer's specifications to check the extraction's performance.
- ✓ If this information isn't available, hire a competent ventilation engineer to determine the performance needed for effective control.
- ✓ The engineer's report must show the target extraction rates.
- ✓ Keep this information in your testing log-book.
- ✓ Get a competent ventilation engineer to examine the extraction thoroughly and test its performance at least once every 14 months. See the HSE publication HSG54 - see 'Further information'.
- ✓ Examine and test RPE thoroughly at least once every three months.
- ✓ Check the air flow and air quality to air-fed RPE at least once every three months or before use.
- ✓ Keep records of all examinations and tests for at least five years.
- ✓ Review records - failure patterns show where preventive maintenance is needed.
- ✓ Carry out air sampling to check that the controls are working well. See sheet G409.



Personal protective equipment (PPE)

- ✓ Ask your supplier to help you select the right PPE.
- ✓ Provide storage for clean and contaminated PPE.

Respiratory protective equipment (RPE)

- ✓ RPE is normally needed for handling sacks, maintenance and some cleaning jobs.
- ✓ Powered or air-fed RPE is more comfortable to wear.
- ✓ Select RPE that suits the wearer, the job and the work environment.
- ✓ Decide the level of protection from air sampling data. Otherwise, provide RPE with an assigned protection factor (APF) of at least 20. See sheet R3.
- ✓ Disposable RPE is acceptable.
- ✓ Make sure all RPE is properly fit-tested - get advice from your supplier.
- ✓ Replace RPE filters as recommended by the supplier. Throw away disposable RPE at the end of the job or the end of the shift.
- ✓ Keep RPE clean.

Other protective equipment

- ✓ Provide clothing designed for use in potteries, eg 'Terylene' or 'Pertex' with side or rear fastenings. Consult Ceram - see 'Useful links'.
- ✓ Use a contract laundry or a suitable equivalent to wash work clothing. Warn them that the dust contains silica.
- ✓ Provide protective gloves - single-use gloves are acceptable. If you must use latex gloves, use only 'low-protein, powder-free' gloves.
- ✓ Throw away 'single-use' gloves when they are taken off.
- ✓ Skin creams help in washing contamination from the skin. After-work creams help to replace skin oils.

Caution: Never allow use of compressed air for removing dust from clothing.

Health surveillance

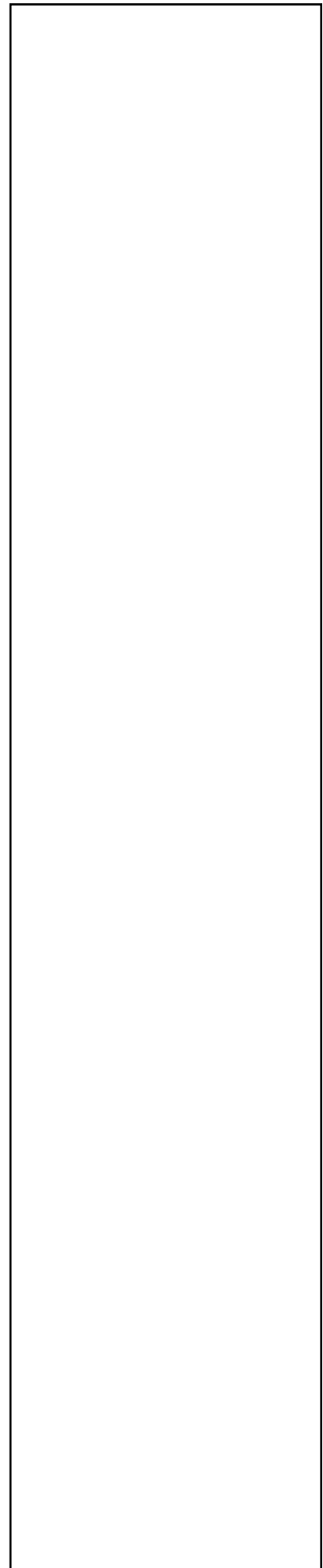
- ✓ You need health surveillance unless exposure to RCS is well below the limit. See sheet G404.
- ✓ You also may need to assess lead exposure.
- ✓ Consult an occupational health professional - see 'Useful links'.
- ✓ Wet work can lead to dermatitis. Check regularly for skin dryness or soreness.

Cleaning and housekeeping

- ✓ Clean down the enclosure and equipment as soon as possible after use.
- ✓ Use a Type H vacuum cleaner fitted with a HEPA filter to clear up dust eg. on overhead fittings.
- ✓ Damp down and shovel large amounts carefully to avoid stirring up dust. Provide respiratory protective equipment (RPE).
- ✓ Store empty bags outside the workroom. Dispose of wastes safely.

Caution: Never use compressed air to move dust.

Dry sweeping is prohibited.



Training and supervision

- ✓ Tell workers that silica dust can cause serious lung diseases.
- ✓ Working in the right way and using the controls correctly is important for exposure control. Train and supervise workers. See sheet CR0.
- ✓ There is also a risk of skin disease - dermatitis.
- ✓ Get safety data sheets from your suppliers and identify the more dangerous products.

Further information

- *Dust control in powder handling and weighing: A revised COSHH guide* Guidance HSE Books 1997 ISBN 0 7176 1370 4
- *Maintenance, examination and testing of local exhaust ventilation* HSG54 (Second edition) HSE Books 1998 ISBN 0 7176 1485 9
- *Respiratory protective equipment at work: A practical guide* HSG53 (Third edition) HSE Books 2005 ISBN 0 7176 2904 X
- *Control of exposure to silica dust in small potteries* Ceramics Information Sheet CEIS2 HSE 2002 Web only version available at www.hse.gov.uk/pubns/ceramdex.htm
- *Health surveillance: A ceramics industry booklet* Leaflet IACL100 HSE Books 1996 (single copy free)
- For environmental guidelines see sheet CR0

Useful links

- The British Ceramics Confederation (BCC) may advise on health and safety consultants and training providers. Website: www.ceramfed.co.uk
- Contact Ceram for advice on detailed equipment design. Website: www.ceram.co.uk
- HSE priced and free publications are available from HSE Books Tel: 01787 881165 Website: www.hsebooks.co.uk.
- HSE free leaflets can be downloaded from HSE's website: www.hse.gov.uk/pubns.
- For information about health and safety ring HSE's Infoline Tel: 0845 345 0055 Textphone: 0845 408 9577 e-mail: hse.infoline@natbrit.com.
- Contact the British Occupational Hygiene Society (BOHS) on 01332 298101 or at www.bohs.org for lists of qualified hygienists who can help you.
- Look in the Yellow Pages under 'Health and safety consultants' and 'Health authorities and services' for 'occupational health'.
- Also see www.nhsplus.nhs.uk.

Employee checklist

- Are you sure how to use all dust controls?
- Check your RPE works properly every time you use it.
- Is the dust extraction working? Check the gauge.
- Look for signs of leaks, wear and damage every day.
- If you find any problems, tell your supervisor. Don't just carry on working.
- Clear up dust spills promptly.
- Make suggestions to improve the effectiveness of dust control.
- Co-operate with health surveillance.
- Check your skin regularly for dryness or soreness - tell your supervisor if these appear.
- Use, maintain and store your protective equipment in accordance with instructions.
- Throw away single-use gloves every time you take them off.
- Use skin creams provided as instructed.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory 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 as illustrating good practice.