

FD5

COSHH essentials for foundries: Silica

Coremaking and shell moulding (small scale)

Control approach 2 Engineering control



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 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.

Sand bonding agents are also hazardous to health. This sheet does not apply to those substances.

Look at safety data sheets for more information.

Main points

- High dust levels result from sand handling.
- 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.

Hazard

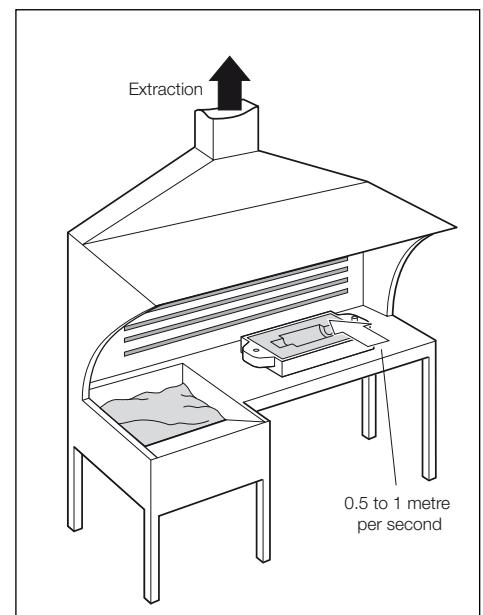
- ✓ Handling sand can produce respirable crystalline silica (RCS).
- ✓ All RCS is hazardous, causing silicosis. This is a serious lung disease causing permanent disability and early death.
- ✓ Silicosis is made worse by smoking.
- ✓ 'Respirable' means that the dust can get to the deepest parts of the 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).
- ✓ Sand contains up to 100% crystalline silica.

Access and premises

- ✓ Only allow access to authorised staff.

Equipment

- ✓ Control sand spillage. Make sure the right amount of sand is used for the mould.
- ✓ You need an air speed between 0.5 and 1 metres per second into the moulding enclosure.
- ✓ Fit a manometer or pressure gauge near the extraction point to show that the extraction is working properly.
- ✓ Always confirm that the extraction is turned on and working at the start of work. Check the gauge.
- ✓ Discharge cleaned, extracted air to a safe place outside the building, away from doors, windows and air inlets.
- ✓ Have a supply of clean air coming into the workroom to replace extracted air.
- ✓ Shake down air filters four times a day.
- ✓ Fit an indicator or alarm to show if filters have blocked or failed.
- ✓ Consult a qualified ventilation engineer to design new control systems and to update current controls. See sheet G406.



Maintenance, examination and testing

- ✓ Follow instructions in maintenance manuals - keep equipment in effective and efficient working order.
- ✓ Repair faulty extraction systems as soon as possible. Meanwhile, wear respiratory protective equipment (RPE).
- ✓ Sand is very abrasive and plant wears out quickly. Plan regular maintenance.
- ✓ Every day, look for signs of damage. Noisy or vibrating fans can indicate a problem.
- ✓ At least once a week, check that the extraction system and gauges work properly.
- ✓ 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'.
- ✓ Keep records of all examinations and tests for at least five years.
- ✓ 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 get the right PPE.

Respiratory protective equipment (RPE)

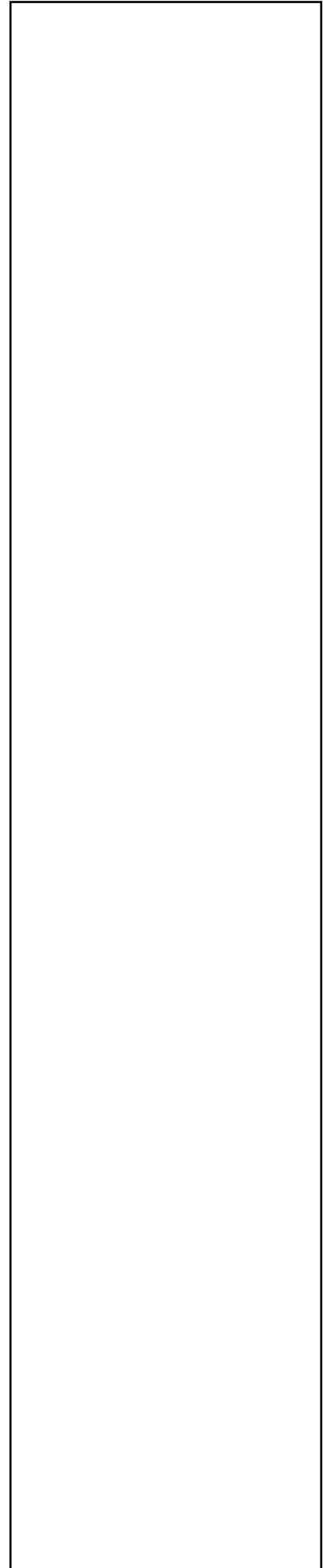
- ✓ RPE should not be needed if the extraction is designed correctly and working properly.
- ✓ RPE may be needed for maintenance and cleaning. If so:
 - Provide RPE with an assigned protection factor (APF) of at least 10. See sheet R2.
 - Disposable RPE is acceptable - throw this away at the end of the task.
 - Otherwise replace RPE filters as recommended by the supplier.

Other protective equipment

- ✓ Provide chemical-resistant protective gloves if using sand bonding agents. Get advice from your product supplier.
 - ✓ Provide coveralls that do not retain dust.
 - ✓ Use a contract laundry or suitable equivalent to wash work clothing. Warn them that the dust contains silica.
- Caution: Never allow use of compressed air to remove dust from clothing.**

Health surveillance

- ✓ You need health surveillance unless exposure to RCS is well below the limit. See sheet G404.
- ✓ Consult an occupational health professional. See 'Useful links'.



Cleaning and housekeeping

- ✓ Every day, clear up spilt sand.
- ✓ Shovel large spills carefully.
- ✓ Clean general workrooms once a week to stop dust being stirred up.
- ✓ Use a Type H vacuum cleaner fitted with a HEPA filter to clear up dust.

Caution: Don't use a brush or compressed air.

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 FDO.

Further information

- *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
- For pattern making see *COSHH essentials for woodworkers* at www.hse.gov.uk
- For environmental guidelines see sheet FDO

Useful links

- 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

- Is the extraction switched on and working properly? Check the gauge.
- Check that any RPE works properly every time you use it.
- Look for signs of leaks, wear and damage.
- If you find any problems, tell your supervisor. Don't just carry on working.
- Co-operate with health surveillance.
- Use, maintain and store your PPE in accordance with instructions.
- Never use solvents to clean your skin.

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.