

FD10

COSHH essentials for foundries: 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 with dust and fume 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.

Main points

- Gouging produces a great deal of metal fume, silica dust and harmful gases.
- 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.

Gouging

Control approach R

Respiratory protective equipment (RPE)

Hazard

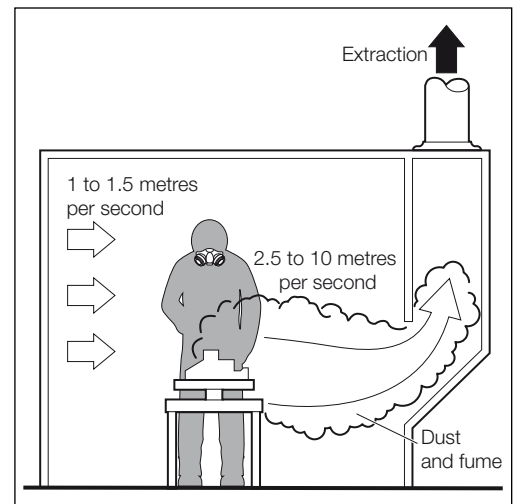
- ✓ Gouging (air-carbon arc gouging) can produce respirable crystalline silica (RCS).
- ✓ All RCS is hazardous, causing silicosis. This is a serious lung disease causing permanent disability and early death.
- ✓ Silicosis is made worse by smoking.
- ✓ 'Respirable' means that the dust can get to the deepest 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

- ✓ RPE is required, and an enclosed extracted booth.
- ✓ Provide a turntable to move the casting.
- ✓ You need an air speed between 1 and 1.5 metres per second into the booth, and between 2.5 and 10 metres per second at the extraction point.
- ✓ Fit a manometer or pressure gauge near the extraction point, to show that 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.



Procedures

- ✓ Ensure that users check their RPE works properly every time they use it.
- ✓ Position the workpiece so that it is as close as possible to the extraction point.
- ✓ Ensure that fettling dust is directed into the booth and pneumatic tools do not blow dust out of the booth.

Caution: Workers should not stand between the casting and the extraction.

Maintenance, examination and testing

- ✓ Follow instructions in maintenance manuals - keep equipment in effective and efficient working order.
- ✓ If any equipment is faulty, stop work until it is repaired.
- ✓ Visually check compressed airlines for signs of damage before use.
- ✓ Keep airline oil and water traps empty, and filters clean.
- ✓ Every day, look for signs of damage to ducting, fans or air filters. Noisy or vibrating fans can indicate a problem.
- ✓ At least once a week, check that the extraction system and gauge 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, or six months for non-ferrous metals. See the HSE publication HSG54 - see 'Further information'.
- ✓ Review records to see if there are failure patterns that make planning maintenance easier.
- ✓ Examine and test RPE thoroughly at least once every three months.
- ✓ Check the airflow and air quality to air-fed RPE at least once every three months.
- ✓ 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.

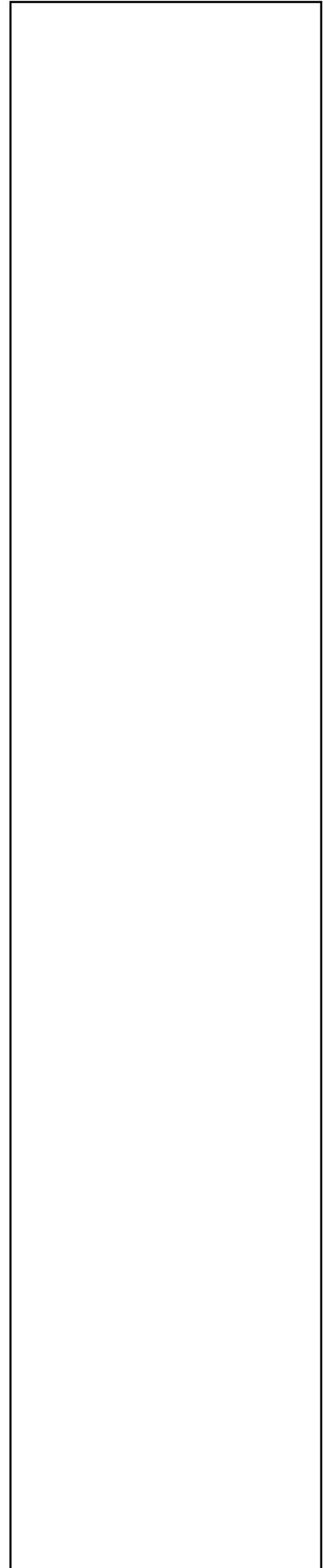
Respiratory protective equipment (RPE)

- ✓ RPE is always needed. Provide a compressed air-line helmet to BS EN 270 standard. See sheet R5.
- ✓ Select RPE that suits the wearer, the job and the work environment.
- ✓ Make sure all RPE is properly fit-tested - get advice from your supplier.
- ✓ Keep RPE clean and store it away from dust.

Other protective equipment

- ✓ Provide flame-resistant coveralls and protective gloves.
- ✓ 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

- ✓ Keep the booth free of combustible materials.
 - ✓ 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 your workers that dust, fume and gases from gouging can cause serious lung disease.
- ✓ 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
- *The safe use of compressed gases in welding, flame cutting and allied processes* HSG139 HSE Books 1997 ISBN 0 7176 0680 5
- *Permit-to-work systems* Leaflet INDG98(rev3) HSE Books 1997 (single copy free or priced packs of 15 ISBN 0 7176 1331 3)
- 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.
- British Standards are available from BSI Customer Services,
389 Chiswick High Road, London W4 4AL Tel: 020 8996 9001
Fax: 020 8996 7001 e-mail: cservices@bsi-global.com Website:
www.bsi-global.com.

Employee checklist

- Is the extraction switched on and working properly?
Check the gauge.
- Check that RPE works properly every time you use it.
- Check the RPE air supply.
- 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.