

# FD11

## COSHH essentials for foundries

# Pattern assembly (investment casting)

## 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 fume and protect workers' health.

It is also useful for trade union safety representatives.

This sheet describes good practice using 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.

Some casting waxes contain rosin-based compounds. Assembly and baking out produce 'colophony fume' which can cause asthma.

Control exposure to stop occupational asthma developing. If an individual develops occupational asthma, very low levels in air can trigger an attack. Control exposure to prevent this.

### Main points

- Keep exposure as low as possible using all the controls in this sheet. Make sure the controls work.
- Get safety data sheets - identify more dangerous products and seek substitutes.
- Health surveillance is usually needed. See sheet G402.

### Access and premises

- ✓ Only allow access to authorised staff.

### Equipment

- ✓ Minimise exposure to colophony fume. Use waxes with as low a rosin-resin content as possible.
- ✓ Provide an extracted booth for assembling patterns and runners, for removing blemishes and for storing molten wax.
- ✓ Keep the booth free of items that obstruct the air flow.
- ✓ You need an air speed between 0.5 and 1 metres per second into the booth.
- ✓ Use filters to prevent wax deposits on fan blades and in ducts.
- ✓ Locate the booth away from doors, windows and walkways, to stop draughts interfering with the ventilation and spreading fume.
- ✓ Provide an extracted autoclave for melting out wax. The autoclave should not leak wax fume.
- ✓ Fit manometers or pressure gauges near the extraction points, to show that extraction is working properly.
- ✓ Always confirm that the extraction is turned on and working at the start of work. Check the gauges.
- ✓ 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.
- ✓ Consult a qualified ventilation engineer to design new control systems and to update current controls. See sheet G406.

**Caution: Never use bench-mounted filtration units that return air to the workroom unless fitted with a HEPA filter.**

### 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.
- ✓ Take care not to let the hot wax reservoir overheat - check the thermostat regularly.
- ✓ 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 gauge work properly.

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- ✓ 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.

### Special Care

- ✓ Investment casting slip may contain silica flour. Clear up drips and spills before they dry out.

### Personal protective equipment (PPE)

- ✓ Ask your supplier to help you get the right PPE.
- ✓ Respiratory protective equipment (RPE) should not be needed.
- ✓ Protective gloves are needed. If you must use latex gloves, select 'low protein powder-free' gloves.
- ✓ Throw away single-use gloves every time they are taken off.
- ✓ Skin creams are important for skin condition. They also help in washing contamination from the skin. After work creams help to replace skin oils.

**Caution: 'Barrier creams' do not create a full barrier.**

### Health surveillance

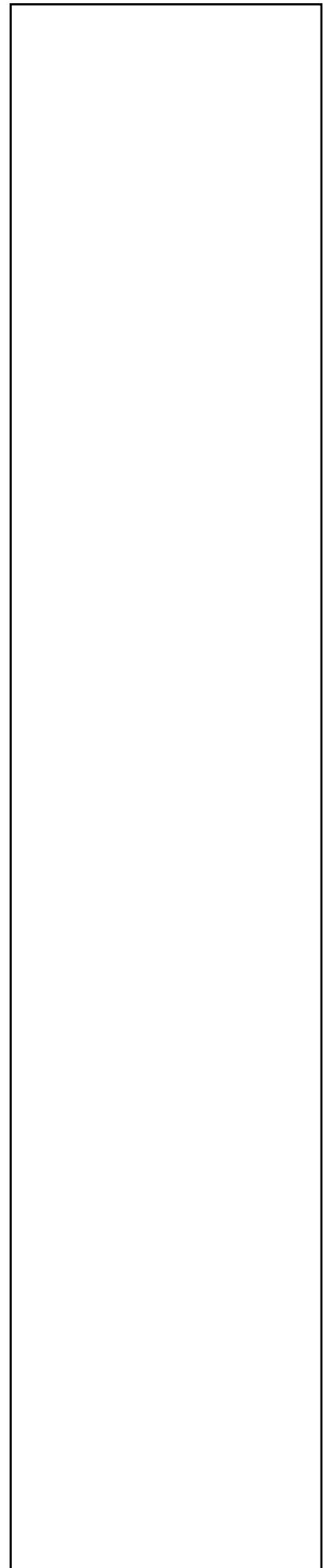
- ✓ If casting wax contains rosin or modified rosin:
  - You need health surveillance for asthma - see sheet G402. There is a chance of asthma developing, even with good controls in place.
  - You need health surveillance for dermatitis - see sheet G403.
- ✓ Consult an occupational health professional. See 'Useful links'.

### Cleaning and housekeeping

- ✓ Clean general workrooms once a week to stop dust being stirred up.
- Caution: Don't use a brush or compressed air.**

### Training and supervision

- ✓ Tell your workers if fume from wax can cause asthma and if there is also a risk of dermatitis.
- ✓ 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
- *Preventing asthma at work. How to control respiratory sensitisers* L55 HSE Books 1994 ISBN 0 7176 0661 9
- *Assessing and managing risks at work from skin exposure to chemical agents: Guidance for employers and health and safety specialists* HSG205 HSE Books 2001 ISBN 0 7176 1826 9
- For environmental guidelines see sheet FDO

### Useful links

- For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit [www.hse.gov.uk/](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.
- Contact the British Occupational Hygiene Society (BOHS) on 01332 298101 or at [www.bohs.org](http://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](http://www.nhsplus.nhs.uk).

This document is available at: [www.hse.gov.uk/pubns/guidance/](http://www.hse.gov.uk/pubns/guidance/) and [www.hse.gov.uk/coshh/essentials/](http://www.hse.gov.uk/coshh/essentials/)

**This document contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.**

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### Employee checklist

- Is the extraction switched on and working properly?  
Check the gauge.
- 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.
- Throw away single-use gloves every time you take them off.
- Never use solvents to clean your skin.
- Use skin creams provided as instructed.