

RB3

COSHH essentials for
rubber manufacturers

Mixing ingredients

Control approach 2 Engineering control

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 using dust extraction when mixing rubber ingredients. Rubber process dust does not include dust from cured rubber, eg. from buffing or trimming.

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.

Get material safety data sheets from your chemical suppliers. Use these to identify the more harmful substances, and try to source less hazardous ingredients.

Main points

- Mixing can produce high levels of dust.
- Keep exposures as low as reasonably practicable using the controls listed in this sheet.
- Make sure the controls work.
- Consider health surveillance for dermatitis.
- Where automated systems are not reasonably practicable use local exhaust ventilation (LEV).

Hazards

- ✓ Rubber process dust is produced in rubber compounding when ingredients are handled, weighed, added to or mixed with uncured natural rubber or synthetic elastomers.
- ✓ Chronic inhalation exposure to rubber dust and fume in rubber factories can cause higher than normal incidence of some types of cancers. Skin exposure to rubber dust and fume may cause dermatitis and skin allergies.
- ✓ The workplace exposure limit (WEL) of rubber process dust is detailed in HSE publication [EH40/2005 Workplace Exposure Limits](#)

Access to work area

- ✓ Allow access to authorised and appropriately trained people only.

Equipment and procedures

- ✓ Keep dust exposures as low as reasonably practicable. Use pre-weighed additives in process-compatible bags or in 'pre-dispersed' forms such as wax pellets, pastilles, granules with binder, or dust-reduced powders.
- ✓ If possible use bulk handling methods. At internal mixers, powders can also be dispersed in liquids.
- ✓ Provide LEV for mixing ingredients.

✓ Internal mixers have numerous seals and joints, see illustration. Good design and maintenance in accordance with manufacturers recommendations are important to control dust and fume emissions into the workroom.

✓ Enclose the mixer feed opening as much as possible and connect it to effective LEV. Curved edges to the enclosure will aid airflow and a baffle should be used to direct extracted air to the rear of the enclosure. A spill-retaining lip on the feed table will also help to control dust.



- ✓ Pre-weighed, process compatible sealed bags for manual feeding are preferable as they avoid the need for sack slitting.
- ✓ Airflow must be sufficient to control airborne contaminants effectively. This will depend on the design, size of opening and the type of process and substance being controlled. Extract any dust that is released from the top of the mill.
- ✓ Provide an easy way of checking the LEV is working, eg. airflow indicator or equivalent.
- ✓ Discharge extracted air to a safe place away from doors, windows and air inlets.
- ✓ Provide adequate clean 'make up air' into the workplace to replace extracted air.
- ✓ Always confirm that the dust extraction is turned on and working at the start of work.
- ✓ Check that workers tip bags with the open end away from them, and that the extraction catches the dust.

Respiratory protective equipment (RPE)

- ✓ RPE is normally not needed.
- ✓ RPE may be needed for maintenance and cleaning.

Personal protective equipment (PPE)

- ✓ Provide coveralls that do not retain dust. Consider disposable coveralls and dispose at the end of the day.
- ✓ Provide clean chemical-resistant gloves, eg. nitrile. Single-use gloves are preferred.
- ✓ Discard single-use gloves every time they are taken off or reusable (chemical-resistant) gloves at the end of the shift.
- ✓ Ask your suppliers to advise on suitable PPE.
- ✓ Use a contract laundry or a suitable equivalent to wash work clothing. Don't allow workers to do this at home.

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 do not provide a full barrier.

Maintenance, examination and testing

- ✓ Keep all equipment used in the task in effective working order. Maintain it as advised by the supplier or installer.
- ✓ Check for signs of damage to control equipment before starting work.
- ✓ Check transfer hoses and connectors regularly for leaks.
- ✓ At least once a week, check that any airflow indicators work properly.
- ✓ Have equipment thoroughly examined and tested against its performance standard, at suitable intervals.
- ✓ For LEV, a user manual or log book is helpful in setting out the frequency of checking, maintenance or parts replacement.
- ✓ For LEV with no user manual or log book, you may need the help of a competent person. They can determine the performance needed for adequate control.
- ✓ LEV systems require a statutory 'thorough examination and test' (TExT).
- ✓ Get a competent person to perform the TExT at least once every 14 months.
- ✓ Carry out all actions arising from the TExT.
- ✓ Several measures are available to check effectiveness of controls, ranging from simple qualitative (eg. use of a dust lamp) to complex quantitative techniques (eg. air sampling) usually for higher-risk scenarios.

Caution: Ensure empty sacks are rolled up in the extracted zone and put in a polythene sack.

Cleaning and housekeeping

- ✓ Vacuum clean the mixing area after every use.
- ✓ Clean general workrooms once a week to stop dust being stirred up.
- ✓ Use at least a Class M vacuum cleaner to clear up dust.
- ✓ Store containers in a safe place and keep them lidded when they are not in use.
- ✓ Dispose of hazardous wastes safely.
- ✓ Consider the need for explosion relief for combustible solids.

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

Health surveillance

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

Training and supervision

- ✓ Provide supervision – ensure that safe work procedures are followed.
- ✓ Tell workers about the hazards associated with their work and how to recognise early signs of asthma and dermatitis.
- ✓ Provide workers with training on:
 - working safely with hazardous substances;
 - when and how to use controls;
 - how to check they are working;
 - how the LEV system works;
 - how to use the LEV to get the best out of it;
 - how to check that the LEV is working;
 - what to do if something goes wrong.
- ✓ Training records are helpful to demonstrate training has taken place.
- ✓ Changes to the work process and LEV mean that staff may need retraining.
- ✓ Involve managers and supervisors in health and safety training.

Essential information

You can find the full COSHH essentials series at www.hse.gov.uk/coshh/essentials/index.htm

Health surveillance for occupational dermatitis COSHH Guidance Sheet G403 HSE Books 2011 www.hse.gov.uk/pubns/guidance/g403.pdf

New and existing engineering control systems COSHH Guidance Sheet G406 HSE Books 2011 www.hse.gov.uk/pubns/guidance/g406.pdf

Exposure measurement: Air sampling COSHH Guidance Sheet G409 HSE Books 2011 www.hse.gov.uk/pubns/guidance/g409.pdf

Further information

Occupational Safety and Health Consultants Register: www.oshcr.org/

Safe to breathe: Dust and fume control in the rubber industry, Leaflet IACL95, HSE 1995, www.hse.gov.uk/pubns/rubindex.htm

The British Tyre Manufacturers Association (BTMA): www.btmauk.com

The British Rubber & Polyurethane Products Association (BRPPA): www.brppa.co.uk

Retread Manufacturers Association: <http://www.retreaders.org.uk/>

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

To report inconsistencies or inaccuracies in this guidance, email: commissioning@wlt.com

Employee checklist

- Is the extraction working?
Is there any obvious dust on work surfaces and ledges?
- Make sure that bags etc aren't blocking LEV extract ducts, so they do not impede airflow and reduce LEV effectiveness.
- 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.
- Co-operate with health surveillance.
- Use, maintain and store your PPE in accordance with instructions, eg. wear hoods where provided.
- Discard single-use gloves every time you take them off or reusable (chemical-resistant) gloves at the end of the shift.
- Wash hands before eating, drinking, smoking, using the lavatory and after work.
- Never use solvents to clean your skin.
- Use skin creams provided as instructed.