

SR29

COSHH essentials
Service & Retail

Stripping alloy wheels with dichloromethane-based fluids

Control approach 2

Engineering control



This information will help employers, franchisees and the self-employed to comply with the Control of

Substances Hazardous to Health Regulations 2002 (COSHH), as amended, to control exposure and protect workers health.

It is also useful for trade union and employee safety representatives.

This sheet describes good practice for removing surface coatings including paint and lacquer, and powder coatings (plastic).

It covers the points you need to follow to reduce exposure to an adequate level. For dichloromethane (DCM), this is well below 100 ppm (8-hour time weighted average, TWA) and 300 ppm (15-minute TWA).

Some stripping mixtures contain methanol, sodium hydroxide or hydrofluoric acid, which are dangerous.

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

Look at product safety data sheets for more information.

Main points

- The task creates vapours and mists that need controlling.
- DCM vapour has caused deaths in stripping operations.
- Methanol vapour has caused serious fires.
- Hydrofluoric acid (HF) can cause severe burns.
- Sodium hydroxide in the eye can cause blindness.
- Make sure the controls work and are used properly.

Also see sheet SR0

Access and premises

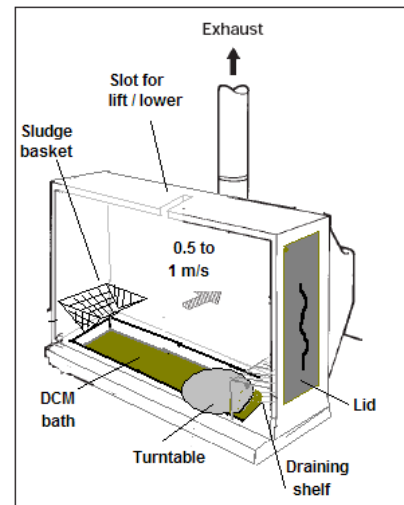
- ✓ Only allow access to authorised staff, but avoid lone working.
- ✓ Where possible, site the equipment away from doors, windows and walkways. Draughts interfere with the extraction and spread contamination.
- ✓ Store containers in a safe place.

Equipment

DCM-based stripping fluids

- If you must use a stripping mixture containing HF or sodium hydroxide, talk to your supplier:
- use mixtures with these substances at as low a concentration as possible, and
- check that their product is suitable for the materials being stripped

- ✓ Transfer stripping fluids by pumping or siphoning, not by pouring.
- ✓ Provide a booth for dipping, stripping and drying that is large enough to contain all the equipment.
- ✓ Fit a turntable within the booth, to help when removing coatings.
- ✓ Fit lifting equipment to lower articles into and lift from the stripping solution onto the turntable.
- ✓ Regularly remove sludge – can you use continuous filtration? Otherwise, put a mesh basket above the stripping solution in the booth.
- ✓ You need a qualified ventilation engineer to design new control systems and to update current controls. See sheet G406.
- ✓ Fit a manometer or pressure gauge near the extraction points, to show that the system is working properly.
- ✓ You need inward airflows between 0.5 and 1 metre per second into the booth.
- ✓ The airflow must be even across the booth face.
- ✓ Discharge extracted air to a safe place away from doors, windows and air inlets.
- ✓ Have a supply of clean air coming into the workroom to replace extracted air.
- ✓ Avoid skin and eye contact with stripping fluids.



Procedures

- ✓ **Never lean into the tank during stripping or cleaning operations.**
- ✓ **Never leave alloy wheels in stripping solutions for prolonged periods.**
- ✓ **Never add HF or sodium hydroxide to make the stripping solution more effective.**
- ✓ **Cover all tanks when not in use.**
- ✓ Brush to remove coatings - direct spray and mist into the booth.
- ✓ Rinse in clean water to remove excess stripping fluids if jet washing is

- ✓ subsequently used to remove loosened paint films (see sheet SR1).
- ✓ Leave stripped wheels in the booth until they are dry.
- ✓ If you don't use filtering, scoop sludge into the basket from time to time. Don't let it build up.
- ✓ Let sludge drain and dry off for a few hours – keep the booth running.
- ✓ Plan for small and large spills. See 'Further information', WIS19.

Caution: HF is very dangerous. Stock calcium gluconate gel and get expert advice on first aid: see 'Further information'.

Personal Protective Equipment (PPE)

- ✓ Ask your supplier to help you get the right PPE.
- ✓ Keep PPE clean and replace it regularly.

Respiratory protective equipment (RPE)

- ✓ RPE is not normally needed if the extraction is working properly.
- ✓ If you have no lifting equipment, provide RPE for dipping and lifting articles in the booth.
- ✓ RPE is needed for cleaning out the stripping tank and dealing with spills.
- ✓ Provide 'CE' marked constant flow airline breathing apparatus (CFABA) with a light duty hood having an Assigned Protection Factor of at least 40. See sheet R5.
- ✓ Make sure that RPE fits properly. Users must be individually trained and fit-tested.
- ✓ Workers must check that RPE works properly every time they use it.
- ✓ Keep RPE clean and store it in a clean place.

Other protective equipment

- ✓ Provide disposable coveralls.
- ✓ Provide disposable long-sleeved nitrile gloves for splash protection from DCM fluids and acids. For fluids containing HF, use HF resistant gloves tested to BS EN 374. See sheet 101.
- ✓ Train workers to throw these away every time they take them off.
- ✓ Provide face and body protection where splashes are likely, eg a visor and plastic apron.

Skin care

- ✓ Provide pre-work skin creams to help wash dirt from the skin, and after-work creams to replace skin oils.

Maintenance, examination and testing

- ✓ Keep equipment in effective and efficient working order - follow instructions in maintenance manuals.
- ✓ At least once a week, check the stripping fluid by hydrometer. Does it need topping up? Expired fluids can become flammable.
- ✓ 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 logbook.
- ✓ Have the system examined and tested against its performance standard - generally at least every 14 months (see HSE publication HSG258).
- ✓
- ✓ **Other tests**
- ✓ Examine and test CFABA thoroughly at least once every three months. Replace worn parts.
- ✓ The air supplied to CFABA should be clean, safe to breathe and tested at least every three months. See 'Further information', HSG53.
- ✓ Monitor the expiry date on any calcium gluconate gel tubes.
- ✓ Have air sampling to check the controls - see sheet G409.
- ✓ Keep records of all examinations and tests for at least five years.

Cleaning and housekeeping

- ✓ Use RPE for cleaning out the stripping tank and dealing with spills of stripping solution
- ✓ Also use all other PPE for these tasks.
- ✓ Deal with fluid spills immediately.
- ✓ Clean equipment and the work area daily. Clean the workroom regularly - once a week is recommended.
- ✓ Dispose of hazardous waste and empty containers safely.

Training and supervision

- ✓ Tell operators about the chemical hazards. See part 15 of safety data sheets.
- ✓ Train and supervise operators.
- ✓ Check that control measures are in place and being followed.

Further information

- S100, S101 and S102 - www.hse.gov.uk/pubns/index.htm - skin
- G403, G406, G409 - www.hse.gov.uk/pubns/index.htm - generic
- SR1 – www.coshh-essentials.org.uk/assets/live/SR01.pdf - jet washing
- LEV INDG408 www.hse.gov.uk/pubns/indg408.pdf
- INDG307 Hydrofluoric acid www.hse.gov.uk/pubns/indg307.pdf
- EIS21 Engineering Information Sheet 21
www.hse.gov.uk/pubns/eis21.pdf
- WIS19 Woodworking Sheet 19 www.hse.gov.uk/pubns/wis19.pdf
- HSG53, Respiratory protective equipment at work - a practical guide
- For environmental guidelines, see sheet G0.

Useful links

- Infoline
- BOHS
- Trade associations are useful sources of information on health and safety, and on training providers.

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.

Employee checklist

- Is the extraction switched on and working properly? Check the gauge.
- Brush to remove coatings into the booth.
- Clear up spills immediately.
- Look for signs of leaks, wear and damage.
- If you find any problems, tell your supervisor. Don't just carry on working.
- Use, maintain and store your PPE in accordance with instructions.
- Throw away single-use gloves every time you take them off.
- Wash your hands before every break.
- Use skin creams provided as instructed.