

WORKING with diisocyanates (MDI, TDI)

What are diisocyanates?

Diisocyanates are chemicals which may be supplied as liquids, solids or solutions. In combination with polyols (e.g. polyesters and polyethers bearing free hydroxyl groups) or other compounds with active hydrogen atoms, they are used for the manufacture of cellular and non-cellular polyurethane polymers, coatings, adhesives, sealants, elastomers and varnishes.

Where are diisocyanates used?

One of the major uses for diisocyanates is in the production of polyurethane foams. Polyurethanes are used in a number of major industries such as construction, insulation, automotive, furniture, domestic appliances, textiles and shoes.

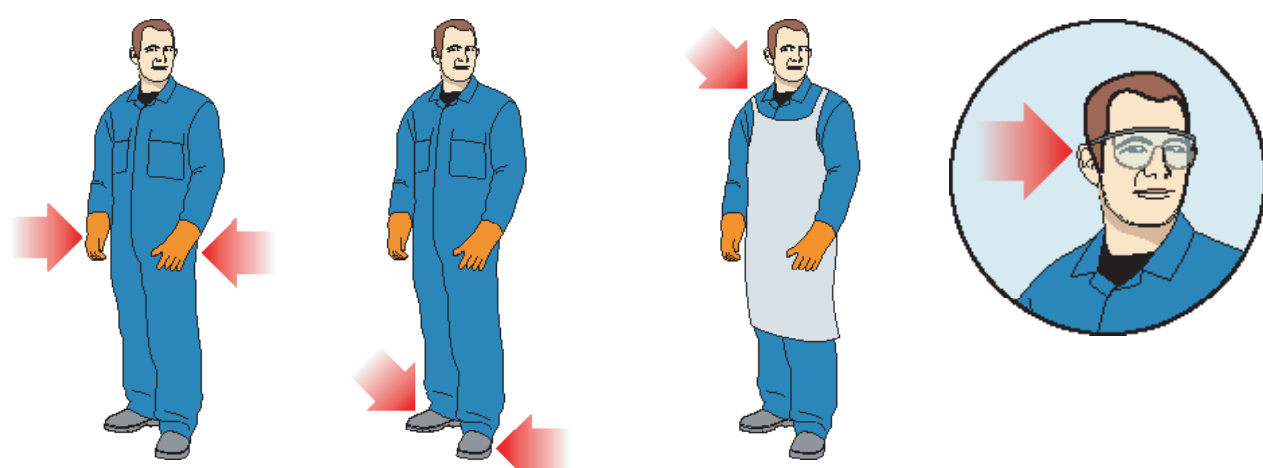
Safe handling

Diisocyanates are reactive chemicals which require correct handling to ensure that they are used safely.

This means avoiding direct exposure of the body via inhalation, skin contact or ingestion (by mouth). Ways of achieving this are outlined on this wallchart.

In particular, inhalation of vapours, aerosols and dusts should be avoided, since this can lead to irritation and in some cases to a reduction of lung function and/or sensitisation (asthma).

Continuous use of the correct Personal Protective Equipment (PPE) PPE's are Risk Management Measures



Wear protective gloves

Wear overall & boots

In emergencies wear overall and/or heavy duty apron

Wear eye protection

Good personal hygiene

- Creams to ensure good skin condition can be used
- Creams are not a replacement for protective gloves
- Wash with soap & water after finishing work and before eating, drinking or smoking
- Do not use solvents for washing
- Use disposable towels
- Do not re-use contaminated clothing or gloves



Emergency procedures: Fire

Chemical fires need to be extinguished with foam, dry-chemical, carbon dioxide or water fog



Follow your normal factory emergency procedure

- Sound Alarm
- EVACUATE
- Use trained specialists to fight fire
- Ensure protection from diisocyanates emissions

Respiratory Protective Equipment (PPE) as Risk Management Measure

- When potential exposure
- Spray applications
- Dust with unreacted diisocyanates
- Hoods
- Masks:
 - Half-mask, Full face mask
 - Air filter
 - A2 for vapour only
 - A2/P2 or 3 vapour & aerosol/dusts
 - Typically to be replaced after 2 days unless different guidance from supplier.
 - Supplied fresh air
- Respiratory equipment should be readily available (and well maintained)



Good workplace ventilation

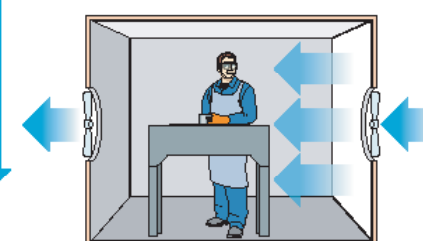
- Check that the extraction/ventilation system is switched on
- Place hood as near as possible above the source
- Repeatedly check flow-direction



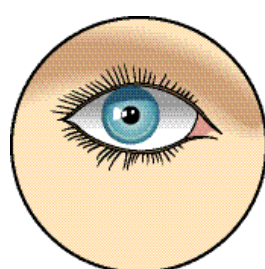
Bad



Best



Emergency procedures: First aid



- Force open the eyelids
- Flush with lots of water for at least 15 minutes
- If in doubt, keep flushing
- See eye specialist as soon as possible
- Advice not to wear contact lenses, they could complicate treatment in case of emergency



- Immediately remove contaminated clothing and wash with soap & water
- A diisocyanates skin decontamination study demonstrated that cleaning very soon after exposure is important, and that a polyglycol-based skin cleanser or corn oil may be more effective than soap and water



- Go outside into fresh air
- Doctor must be called or patient taken to medical facility
- Inform supplier – who can provide supporting information

Clean and safe workplace



- Keep work area clean and tidy
- Respiratory equipment should be readily available (and well maintained)
- Know the locations of safety showers and eyewash facilities
- Do not eat, drink or smoke in the workplace
- Creams to ensure good skin condition can be used
- Creams are not a replacement for protective gloves

EUROPEAN DIISOCYANATE & POLYOL
Isopa
PRODUCERS ASSOCIATION

Av. E. Van Nieuwenhuyselaan 6
B-1160 Brussels, Belgium
Tel: +32 2 676 74 75
Fax: +32 2 676 74 79
main@isopa.org

www.isopa.org
www.polyurethanes.org

For more detailed information regarding safe working with diisocyanates please refer to product and safety data sheets from the raw material suppliers.