ISOPA PRODUCT STEWARDSHIP PROGRAMMES

One Step Ahead

Miscellaneous info pack
One Step Ahead
Methylene Chloride
Methylene Chloride (MC or DCM) classification

**Signal word:** Warning

**Hazard statements**
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H335 May cause respiratory irritation
- H336 May cause drowsiness or dizziness
- H351 Suspected of causing cancer
- H373 May cause damage to liver/ blood through prolonged or repeated exposure

**Precautionary Statements**
Follow precaution statements and product labelling in supplier’s SDS.

**Signal word:** Harmful

**Risk Phrases**
- R40 Limited evidence of a carcinogenic effect
- R36/37/38 Irritating to eyes, respiratory system and skin
- R67 Vapours may cause drowsiness and dizziness

**Safety Phrases**
Follow precaution statements and product labelling in supplier’s SDS.
Methylene Chloride: Hazardous Properties

MAIN PRACTICAL CONCERNS:

- High concentrations of vapours will cause loss of feeling (anesthesia) and unconsciousness (narcosia)
- Skin irritation by direct contact

OTHER WARNING PROPERTIES:

- Sweet, ether-like odour at rather high level: inadequate warning for hazardous exposures
- Gas density >> air: vapors tend to remain localized and/or diffuse slowly in the breathing zone of workers
- Flammable range: 14% to 22% (in air)
If you can smell methylene chloride, you are exposed to levels above the exposure limit. Open windows or doors and/or use fans to increase air circulation.
Methylene Chloride Safe Exposure - Inhalation Exposure Limits Guidelines in ppm

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<table>
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<tbody>
<tr>
<td>OSHA PEL (8 hrs weighted average)</td>
<td>25</td>
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<tr>
<td>OSHA STEL (short term exposure limit 15 mins)</td>
<td>125</td>
</tr>
<tr>
<td>South Africa</td>
<td>50</td>
</tr>
<tr>
<td>Kuwait</td>
<td>25</td>
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<tr>
<td>UAE Dubai</td>
<td>50</td>
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<tr>
<td>Egypt</td>
<td>50</td>
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An exposure limit is the maximum acceptable concentration in workplace air of a chemical. This means most workers can be exposed at these given levels or lower without any harmful effects.

Up to date limits should be checked with local legislation. This list is not exhaustive.
Where could you be exposed?

- Foaming and cutting area
- Foam curing area
- Cleaning operations using methylene chloride as solvent
  
  !!! Do not use methylene chloride for washing hands !!!

- Spillages
Protective Measures for methylene chloride

- Exposure to high levels of methylene chloride is likely if methylene chloride, or a product containing it, is used in a room with inadequate ventilation.

- Use adequate PPE when working

- Check that the extraction system is switched on and the room is well ventilated and provided with fresh air → Do not eat, drink or smoke in the workplace

- If you feel unwell, inform your colleagues and leave the workplace
Emergency response for methylene chloride

- **For small spills**
  Use absorbent material

- **Find information on these sections in SDS:**
  - Hazards Identification
  - First-aid measures
  - Fire Fighting Measures
  - Accidental Release Measures
  - Handling and Storage
  - Exposure Controls / Personal Protection
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Catalysts
Catalysts

- Catalysts can be corrosive, irritants, sensitisers and flammable

- Symptoms of exposure include chemical burn, swelling, itching, redness and hazy vision

- Use the right PPE when working with catalysts and polyol formulation components (see SDS)
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Pentane
Hazardous Properties of Pentane

- Highly flammable
- Flash Point: - 40°C to - 20°C (the lowest temperature at which liquid releases sufficient vapour for ignition)
- Auto ignition temperature ca. 280°C (at which the vapor-air mixture ignites on a hot surface.)
- Explosive vapor-air mixtures:
  Lower explosion limit: 1,4 Vol% = 41 g/m³
  Upper explosion limit 7,8 Vol% = 240 g/m³
  (Evaporation rate at 20°C - 30°C > 2,4 kg/h per m² surface)
  Vapor has higher density than air!

Beware of easy build-up of electric charge
Protective Measures

Avoid explosive atmosphere (primary measure)
- No open handling, closed systems
- Controlled ventilation
- Generate inert atmosphere with Nitrogen

Avoid sources of ignition (secondary measures)
- Explosion-proof machinery (encapsulation, no sparks, no hot surfaces)
- Avoid electrostatic sparks (earthed machinery, no plastic containers)
Incident / Alarm

- In case of spillage or any alarm
  Keep calm

- Stop pentane dosage, avoid ignition sources
  Increase ventilation
  Self-contained breathing apparatus if ventilation is insufficient
  Protective clothing
  Stop leakage
  Cover spillage with absorbant
  Extinguishing material: CO₂, Foam, Powder  no water!
Use of Pentane - Summary

Pentane is highly flammable and may build up explosive mixtures with air

- Avoid any ignition source
- Ensure that static electricity cannot build-up
- Monitor level of pentane in air
- Remember that pentane is heavier than air
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