



Material Safety Datasheet

Cas No
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HE 33

Company Details

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1. Product and Company Identification

Trade / Commercial Name HE33
Chemical Name Diphenylmethane diisocyanate prepolymer
Formula
Chemical Family MDI based prepolymer
Synonyms
Un No Hazchem Code 1[Z]
ERG No 0 EAC 0

2. Hazards Identification

Not Hazardous for transportation.
Contains diphenylmethane-4,4-diisocyanate $\geq 25\%$
Harmful Xn
Harmful by inhalation
Irritating to eyes, respiratory system and skin.
May cause sensitization by inhalation and skin contact.
For their own protection, persons who suffer from hypersensitivity of the respiratory tract (e.g. asthmatics and chronic bronchitis sufferers) should avoid handling this product.
Symptoms affecting the respiratory tract can also occur several hours after overexposure.
Vapours and aerosols are the primary risk to the respiratory tract.
Product will react with water and produce carbon dioxide which can lead to dangerous build up of pressure in sealed containers.

3. Composition

Hazardous Components Diphenylmethane-4,4-diisocyanate $\geq 25\%$

4. First Aid Measures

First Aid Skin
Wash with plenty of warm water and soap, but preferably with a cleanser based on polyethylene glycol.
Consult a doctor in the event of a skin reaction.
Soiled, soaked clothing and shoes must be immediately removed, decontaminated and disposed of.

First Aid Eyes

Flush eyes with lukewarm water for a sufficiently long period of time (10 minutes).
Hold eyelids open while washing.
Consult a doctor.

First Aid Ingested

Unlikely route of exposure.

In case of ingestion, do not induce vomiting, consult a doctor.

First Aid Inhalation

If aerosol or vapour is inhaled in high concentrations:

Remove person to fresh air and keep him warm, let him rest.

If there is difficulty in breathing, consult a doctor.

Information for the physician: The product irritates the respiratory tract and may trigger sensitisation of the skin and respiratory tract. Treatment of acute irritation and bronchial constriction is primarily symptomatic. Extended medical care may be necessary, depending on the extent of the exposure and the symptoms.

5. Fire Fighting Measures

Extinguishing media: CO₂, Foam, Dry Chemical; in cases of large fires, water spray should be used.

Formation of carbon monoxide, nitrogen oxide, isocyanate vapour and traces of hydrogen cyanide are possible in a fire.

Self contained breathing apparatus for firemen.

Evacuate personnel located downwind. Do not allow contaminated extinguishing water into the soil, groundwater or surface waters.

6. Accidental Release Measures

Small spills: Put on protective equipment (see paragraph 8).

Evacuate all persons from the area. Avoid breathing of the fumes.

Contain (avoid spillage from entering drains or water courses) and decontaminate.

Product will react with water and produce a solid polymer and carbon dioxide, the solid polymer is an insoluble product (polyurea).

Cover with damp, fluid-binding material (sand, sawdust or chemical binder based on calcium silicate hydrate)

Transfer to waste container after approx. 1 hour (CO₂ formation). Keep damp and in the open air in a safe place for 7 to 14 days.

Restrict access to area.

Waste should be disposed of as described in Chapter 13, "Advise on disposal".

Large spills: Evacuate all personnel not properly equipped with protective equipment and appropriate breathing apparatus.

Only experienced and properly trained personnel should be authorised to attempt to isolate and contain the spill.

Spilled material should not be washed down a drain, into a river or any surface water.

A 3% protein based foam can be sprayed over the material to reduce vapours until an effective decontamination material can be obtained.

Use a solution of 8-10% sodium carbonate and 2% liquid soap in water to decontaminate and to convert the residue into harmless polyurea polymer and carbon dioxide.

7. Handling And Storage

Handling: Observe the usual precautionary measures for chemicals.

Avoid contact with skin.

In all areas where isocyanate aerosol and/or vapour concentrations are produced, exhaust ventilation must be provided in such a way that the OEL is not exceeded. The air should be drawn away from personnel handling the product and the efficiency of the exhaust equipment should be periodically checked.

Storage: Keep containers tightly closed and dry.

Keep separated from foodstuffs.

Prevent cooling below 20°C and heating above 40°C.

Protection against fire and explosion: Explosion protection not required.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits Values for diphenylmethane-4,4-diisocyanate:

TWA 0,005 ppm; 0,05 mg/m³

Short term OEL-RL; 0,02 ppm; 0,05 mg/m³

SENSITISER

The control measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure.

The best protection is to enclose operations and/or provide local exhaust ventilation at the site of substance release.

Use a non-sparking, grounded ventilation system separate from other

exhaust ventilation systems. Exhaust directly to the outside.

Supply sufficient replacement air to make up for air removed.

Spraying of the product and using the material at higher

temperatures will increase the risk.

Have a safety shower/eye wash fountain readily available in the immediate work area.

If engineering controls and work practices are not effective in controlling this material, then wear suitable personal protection equipment.

RESPIRATORY PROTECTION: Required at inadequately ventilated workplaces. If product is sprayed, wear air-fed mask or (for short periods only) a combination of charcoal filter and particulate filter mask (German type A2-P2).

EYE PROTECTION : Safety Goggles/face protection.

Suitable material for protective gloves:

Polychloroprene - CR ($\geq 0,5$ mm)

Nitrile rubber - NBR ($\geq 0,35$ mm)

Butyl rubber - IIR ($\geq 0,5$ mm)

Fluorinated rubber - FKM($\geq 0,4$ mm)

Polyvinylchloride - PVC($\geq 0,5$ mm)

Store working clothes separately. Wash hands before breaks and at end of work. Decontaminate, destroy and dispose of soiled protective clothing(see section 13)

Safety precautions for handling freshly moulded polyurethane parts:

Depending on the production parameters, any uncovered surfaces of polyurethane mouldings produced using this raw material may contain traces of substances (e.g. starting and reaction products, catalysts, release agents) with hazardous characteristics (e.g.

harmful, irritating, corrosive, sensitising).
In order to prevent skin contact with the traces of these substances, fully buttoned work clothing and protective gloves whose palm and finger areas at least are coated on the outside with nitrile rubber, PVC or polyurethane should be worn when demoulding or handling the freshly moulded polyurethane parts.

9. Physical & Chemical Properties

APPEARANCE/ODOUR: Pale yellow liquid, low odour

Boiling Point: Polymerises at $\pm 200^{\circ}\text{C}$ with evolution of CO_2

Freezing Point : Approx. 5°C

Relative Density : $1,20 \pm 0,02 @ 25^{\circ}\text{C}$

Vapour Pressure : Not tested

Value for MDI: $< 0,00001 \text{ mbar} @ 20^{\circ}\text{C}$

Flash Point : Not tested; MDI $> 170^{\circ}\text{C}$

Flammable Limits: Not determined
Not soluble in water.

Viscosity: $300 - 1\ 000 \text{ cps} @ 25^{\circ}\text{C}$

pH: Not applicable

10. Stability And Reactivity

Conditions to Avoid

Stable at ambient temperatures.

Thermal decomposition: Polymerises at about 200°C with evolution of CO_2 .

Incompatible Materials

Reacts with water forming CO_2 , in closed containers risk of bursting due to increase of pressure.

Exotherm reaction with alcohols and amines.

In fire situations, carbon monoxide, nitrous oxides, isocyanate vapours and a small amount of hydrogen cyanide can be produced.

Other

11. Toxicological Information

Analogous to diphenylmethane-diisocyanate, isomers and homologues:

LD50 Oral, rat (female): $> 15\ 000 \text{ mg/kg}$

LC50 inhalation, rat: 490 mg/m^3 as aerosol, 4 h exposure

Concentration of the saturated vapour of MDI at 25°C : $0,09 \text{ mg/m}^3$

Skin contact: dermal LD50 (rabbit) $> 9000 \text{ mg/kg}$

Effects on humans by exposure to the product on the:

Eyes: Causes slight temporary reddening and swelling of the conjunctiva and slight reversible clouding of the cornea. In high concentrations vapour product has irritating effect on eyes and mucous membranes.

Skin: Irritant. In case of longer contact with skin, tanning and irritating effects are possible.
Respiratory tract: In high concentrations vapour of product has irritating effects on eyes and mucous membranes.

Special effects/properties: Experience on humans:

Irritation of the mucous membranes in the nose, throat and lungs, dryness of the throat, pressure on the chest, sometimes accompanied by breathing difficulties and headaches. Delayed appearance of the symptoms and allergic reaction in susceptible persons possible.

No detrimental effects to health are known where the product is handled properly and industrial hygiene precautions are observed.

EFFECTS OF CHRONIC EXPOSURE:

No evidence that this product is a mutagen, carcinogen or teratogen.
May cause sensitisation by inhalation or skin contact.

12. Ecological Information

No ecological problems are expected when the product is handled and used with due care. Immiscible with water. Reacts with water producing CO₂ and forming a solid and insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by water soluble solvents. Previous experience shows that polyurea is non-degradable.

Can be slightly hazardous to water.

Biodegradability: 0% after 28 days (respirometer test)

Acute fish toxicity: LC₅₀ = >1000 mg/l (Brachydanio rerio 96h)

Daphnia: EC₅₀ = > 1000 mg/l (24h)

Acute bacteria toxicity: EC₅₀=>100 mg/l (Tested on activated sludge microorganism 3h)

13. Disposal Considerations

Disposal Method Product

There are no uniform EC regulations for the disposal of chemicals or residues.

The disposal of the latter is regulated in the EC member countries through corresponding laws and regulations.

Product waste: May be transported to a controlled incinerator if local regulations are observed.

Decontaminated waste (solid) can be disposed of in a landfill. Check with local authority.

Disposal Method Packaging

Disposal in accordance with local legal provisions.

After containers have been emptied as thoroughly as possible (e.g. by pouring, scraping or draining until "drip-dry"), any product residue adhering to their walls has been rendered harmless, and the product and hazard labelling has been invalidated, they can be sent to an appropriate collection point set up within the framework of the existing take-back scheme of the chemical industry.

Containers must be turned into scrap or recycled in compliance with national legislation and environmental regulations.

14. Transport Information

<u>ERG No</u>	0	<u>Hazchem Code</u>	[Z] 0
<u>IMDG-Shipping Name</u>	NOT CONTROLLED SUBSTANCE		
<u>IMDG Code</u>	N/A	<u>IMDG-Packaging Group</u>	N/A
<u>Marine Pollutant</u>	No		
<u>Class</u>	Non-hazardous		
<u>Subsidiary Risks</u>	None		

15. Regulatory InformationEEC Hazard ClassificationRisk Phases

Harmful Xn

Contains diphenylmethane-4,4-diisocyanate \geq 25 %

Harmful by inhalation

Irritating to eyes, respiratory tract and skin

May cause sensitisation by inhalation and skin contact

Keep locked up and out of reach of children

Do not breathe vapour/spray

Wear suitable protective clothing and gloves

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

NOT CONTROLLED

National Legislation