



Nippon Polyurethane Industry Co., Ltd.
Urethane Materials Department, Sales Division
15F Mita NN Bldg. 4-1-23, Shiba,
Minato-ku, Tokyo 108-0014 Japan
Phone: 81-3-5439-8623 Fax: 81-3-5439-8633

Date of printing: July 27, 2003
Version: No.17
Date of revision: July 1, 2003
Date of issue: November 5, 1986

Product name: MILLIONATE MR-200

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name	MILLIONATE MR-200
General description	Polymethylene polyphenyl polyisocyanate
Manufacturer	Nippon Polyurethane Industry Co., Ltd. 4-1-23, Shiba, Minato-ku, Tokyo Japan
Emergency telephone number	81-3-5439-8623 Urethane Materials Department Sales Division (Monday ~ Friday, Japan standard time 9:00 a.m. ~ 6:00 p.m.)

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Chemical name</u>	<u>wt %</u>	<u>CAS registry</u>
4,4'-diphenylmethane diisocyanate(MDI)	40	101-68-8
Polymethylene polyphenyl polyisocyanate	60	9016-87-9
Control parameters		
4,4'-MDI	0.005ppm	ACGIH(TLV-TWA)2001
	0.02ppm	OSHA(PEL-C)

3. HAZARDS IDENTIFICATION

Emergency overview

Major health hazards

Potentially fatal if inhaled, respiratory tract irritation, skin irritation, eye irritation allergic reactions.

Physical hazards

Reaction with water produces heat and carbon dioxide.

May polymerize. Container may rupture or explode.

Potential health effect

Eye contact

Short term exposure: irritation, blurred vision, eye damage.

Long term exposure: irritation

Ingestion

Short term exposure: nausea vomiting, diarrhea, stomach pain, irregular heartbeat, coma.

Inhalation

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Short term exposure: potentially fatal if inhaled, irritation, allergic reactions, change in body temperature, nausea, vomiting, stomach pain, chest pain, difficulty breathing, asthma, headache, sleep disturbances, mood swing, loss of coordination lung congestion, death.

Long term exposure: same as effects reported in short term exposure, allergic reactions, difficulty breathing, lung damage.

Skin contact

Short term exposure: irritation (possibly severe), allergic reactions, skin disorders.

Long term exposure: irritation, allergic reactions, rash, itching.

4. FIRST AID MEASURES**Eye contact**

Hold eyelids apart and immediately flush eyes with plenty of water for at least 15 minutes. Seek immediate medical advice.

Ingestion

If swallowed, seek medical advice immediately. Wash out mouth with water. Do not induce vomiting.

Inhalation

Remove the patient immediately to an area with fresh air. Seek medical attention.

Skin contact

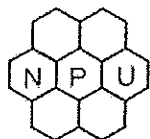
Remove all contaminated clothing and shoes immediately.
Wash the contaminated area thoroughly with water followed by soap.
If irritation persists or inflammation is caused, seek medical advice.

5. FIRE FIGHTING MEASURES

Flash point	226°C , determined by open cup flash test.
Autoignition point	Not available
Range of explosion	None
Flammability	None
Combustibility	Yes
Oxidizibility	None
Self reactivity	None
Dust explosion	None

General hazard

During a fire, aerosols or gases may be generated through decomposition.

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Product name: MILLIONATE MR-200**Fire fighting instructions**

Positive pressure self-contained breathing apparatus and full protective clothing and gloves should be provided.

Splash water onto drums and facilities which are not on fire to avoid fire spreading and heat evolved.

After the fire is extinguished, neutralize the spilled material with decontaminant.

Restrict entry of unauthorized personnel.

Extinguishing media: dry chemical powder, carbon dioxide, water and foam.

6. ACCIDENTAL RELEASE MEASURES**General**

Full protective equipment including respiratory protective apparatus should be worn.

Restrict entry of unauthorized personnel.

Stay in windward position at the time of disposal.

The hazard area should be well-ventilated.

Safely stop discharge.

Small spill

Neutralize the leakage/spillage with decontaminant, or by admixing it with sand, clay or sawdust.

Dispose of in a closed chemical waste container.

Large spill

Admix with sand, clay or sawdust to prevent the spillage/leakage from further spreading out.

Dispose of in a chemical waste container. This container should not be closed.

Neutralize the residues with decontaminant. Wash the spillage area clean with water.

7. HANDLING AND STORAGE**Handling**

The operator should be trained in handling this product.

Appropriate safety measures and protective equipment should be used for this operation.

Provide adequate ventilation and the operator should use protective equipment.

When the drum is pressurized, unscrew the bung slowly to release the pressure before taking it off.

This product should not be filled in an unwashed or wet container.

The use of fire is strictly prohibited in the work area.

Those who show allergenic and sensitizing effects should not be in charge.

Storage



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Keep container properly sealed and store indoors in a well ventilated area.

Once opened, the container should be closed and sealed with nitrogen gas or dry air.

If stored outdoors, the container should be covered with waterproof canvas sheet to avoid being exposed in the rain.

The use of fire is strictly prohibited in the work area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls

Local exhaust ventilation should be provided for indoors use.

Readily accessible eye and hand wash stations should be provided.

Personal protection

Chemical goggles, rubber gloves and suitable respiratory equipment.

Exposure limit:

Refer to Section 2

9. PHYSICAL AND CHEMICAL PROPERTIES

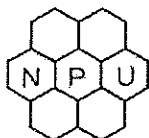
Physical form	Liquid
Color	Brown
Odor	Very slight
Boiling point	190°C (665Pa)
Vapor pressure	<0.001 Pa at 25°C
Evaporation rate	Not available
Freezing point	Not available
Specific gravity	1.236 at 25°C
Initial boiling point	Not available
Viscosity	200 mPa s at 25°C
Solubility (water)	Insoluble
Solubility (other)	Soluble in toluene, ethyl acetate or acetone

Note: The above data are typical physical properties and should not be taken as a specification.

10. STABILITY AND REACTIVITY

Chemical stability (Condition to avoid)

High temperature and moisture



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Product name: MILLIONATE MR-200**Incompatibility**

This product reacts with materials with active hydrogen groups such as amines and alcohols.

Hazardous decomposition product

Reaction with water produces heat and carbon dioxide gas.

Hazardous polymerization

will occur. It gets polymerized by alkaline materials or tertiary amines.

11. TOXICOLOGICAL INFORMATION

Corrosive properties

Not available

Irritant properties

(For 4,4'-MDI)

Prolonged contact on the skin may cause reddish swelling.

Contact on eyes will cause severe pain, and it may cause a sequela of eyesight trouble if the stain is not completely removed immediately.

Allergenic and sensitizing effects

(For 4,4'-MDI)

May cause sensitizing effect on lungs.

The test on a guinea pig showed sensitizing effect on the skin.

Acute toxicity

(For 4,4'-MDI)

Inhalation (rat)

LC 50

370~490mg /m³/4hrs

Oral (rat)

LD 50

>15g/kg

Deep inhalation of the vapor or mist may cause pulmonary edema.

Inhalation of high density vapor or mist may cause sensitizing pulmonary inflammation.

Sub-acute toxicity

Not available

Chronic toxicity

(For 4,4'-MDI)

Prolonged exposure to the vapor or mist may reduce the function of the lungs.

Sensitizing effect on the skin may be chronic.

Carcinogenic effects

(For 4,4'-MDI)

IARC test on animals recognizes the carcinogenicity, but no data on the effects on human beings is available.

Classified in group 3 by IARC evaluation.

Mutagenic effects

(For 4,4'-MDI)

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This product contains over 1% of 4,4'-MDI, which showed a mutagenic effect to a certain salmonella (TA-98, TA-100), when S-9Mix was added in Ames test.

Effects on the reproductive system	Not available
Teratogenic effects	Not available
Others	Not available

12. ECOLOGICAL INFORMATION

Biodegradability	Not available
Bioaccumulation	Not available
Fish toxicity	Not available
Other information on ecotoxicity	Not available

13. DISPOSAL CONSIDERATIONS**Disposal methods**

This product should be incinerated in an appropriate facility.

This product should be treated by authorized agents professionally trained in disposing industrial waste.

Handling empty container after use

Empty drum should be left to stand with water and left unsealed for 48 hours.

Water should subsequently be removed afterward.

Used container should be punctured and scrapped.

14. TRANSPORT INFORMATION

Proper shipping name:	Polymethylene polyphenyl polyisocyanate
Hazardous class:	Not applicable (not classified as hazardous)
Identification no.:	Not applicable
IMDG class :	Not applicable

Follow all the regulations in your country.

Be sure that the container is tightly sealed, that no leakage is found and that all the necessary indications are specified.

Filling, loading and extracting operations should be performed under the supervision of an authorized operator.

Nitrogen gas or dry air should be charged into the container for transportation after filling or extracting.



MATERIAL SAFETY DATA SHEET



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15. REGULATORY INFORMATION

Regulatory information with regard to this substance in your country should be examined by your own responsibility.

16. OTHER INFORMATION

Reason for issue: Update to new format

Prepared by: Technical department

All the chemical materials may present unknown hazards and should be used in caution.

The information herein is given in good faith, but no warranty, express or implied is made.

Consult Nippon Polyurethane Industry Co., Ltd. for further information.