



MATERIAL SAFETY DATA SHEET

Revision Date: 06/02/2013
Date Issued: 06/02/2013

REACTOR PEMEX RA-28

I. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

TRADE NAME: REACTOR PEMEX RA-28
PRODUCT CLASS: ALIPHATIC POLYISOCYANATE (HDI) IN ORGANIC SOLVENT
CHEMICAL FAMILY: POLYISOCYANATE
HEALTH: WARNING

INFORMATION ON
MANUFACTURER/SUPPLIER: EL NERVION S.A DE C.V.
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II. COMPOSITION/INFORMATION ON INGREDIENTS

ITEM	COMPONENTS	CAS NUMBER	CONCENTRATION [%]
01	ALIPHATIC POLYISOCYANATE RESIN	CONFIDENTIAL	57,00
02	ACETATE PROPYLENE GLYCOL METHYL ETHER	108-65-6	7,00
03	BUTYL ACETATE	123-86-4	15,00
04	XILENO	1330-20-7	18,00

III. HAZARDS IDENTIFICATION

Emergency Overview

Physical Appearance

Form: Liquid
Colour: Transparent
Odour: Characteristic
Water solubility: Insolubl, reacts slowly with water to liberate CO₂ gas.
pH: Not applicable

EXPOSURE EFFECTS: Flammable. Could be released gases / toxic fumes during combustion and / or thermal decomposition. A closed container may burst under extreme heat or when the content has been contaminated with water. Use cold water spray to cool fire exposed containers to minimize risk of rupture. Vapors or mist may pose a risk of fire and explosion if exposed to high heat or ignition. Vapors can travel to areas outside the workplace before lighting / back to vapor source. Ground containers and equipment before making the transfer to avoid static sparks. Has been associated with prolonged and repeated occupational overexposure to solvents with brain damage and nervous system



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permanently. Intentional misuse by deliberately concentrating or inhaling solvents may be harmful or fatal. Cause respiratory tract irritation. May cause allergic respiratory reaction. Harmful if inhaled. Respiratory sensitizer. The damage to the lungs and respiratory sensitization may be permanent. Cause skin irritation. May cause allergic skin reaction. Skin sensitizer. Apr animal experiments and other research indicate that diisocyanates Contact with skin may play a role in the causes of sensitization to isocyanates and respiratory reaction. Cause eye irritation, may cause lung damage, can affect the nervous system, can cause brain damage, liver damage, can cause kidney damage. Contains material which may cause cancer.

Potential health effects

OVER-EXPOSURE (prolonged or repeated use): CAN AGGRAVATE OR ACCENTUATE ANY OF THESE EFFECTS.

SKIN CONTACT: Irritating. Can be absorbed through skin. Frequent or prolonged contact may cause irritation, defeating and drying of skin.

INHALATION: Irritant. Lung injury. Central nervous system damage. Xylene or toluene may cause irregular heart beat. Excessive inhalation may irritate the respiratory system.

EYES CONTACT: Irritating. DO NOT wear contact lenses when using this material. May cause tearing, reddening and/or swelling.

INGESTION: The hazards of this material have not been fully investigated; ingestion may be hazardous. Harmful if swallowed. Aspiration into lungs can damage lungs and cause chemical pneumonia. DO NOT INDUCE VOMIT.

MEDICAL CONDITIONS AGGRAVATED: Skin, Eyes, Respiratory, Lungs.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT, INHALATION, INGESTION EYE CONTACT.

CARCINOGENICITY: The carcinogenicity of this material has not been fully investigated.

IV. FIRST AID MEASURES

GENERAL ADVICE

Remove contaminated or saturated clothing immediately and dispose of safety.

Inhalation

If aerosol or mists are inhaled, take affected persons out into the fresh air. Possible discomforts include severe irritation of mucus lining (nose, throat, eyes), cough, sneezing and flow of tears. In case of persistent discomfort, obtain medical attention immediately.

Skin contact

Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Obtain medical attention immediately if symptoms occur. Wash clothing before reuse.



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Eye contact

In case of contact, immediately flush eyes with plenty of water, or if necessary, with eye rinsing solution. In case of persistent discomfort, consult an ophthalmologist.

Ingestion

If accidentally swallowed, rinse mouth thoroughly with water and afterwards, drink plenty of water. In case of discomfort, obtain medical attention. DO NOT INDUCE TO VOMIT.

Notes to physician

After absorbing large amount of substance, apply therapy for irritative effects. If substance has been swallowed, early endoscopy is recommended in order to assess mucosa lesions in the oesophagus and stomach which may appear. If necessary, suck away leftover substance. Allergic reactions cannot be excluded. Apply treatment of allergic reaction if necessary.

Eyes: Stain for evidence of injury to the cornea. If the cornea has burns, apply a preparation of antibiotic / steroid, as needed. The vapors in the workplace also produce reversible corneal epithelial affecting vision.

Skin: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn.

Ingestion: Treat symptomatically. There is no specific antidote. Induce vomiting is contraindicated because of the irritating nature of the compound.

Inhalation: Treatment is essentially symptomatic. A person with a dermal sensitization reaction to this material or lung should be removed from subsequent exposure to any diisocyanate.

V. FIRE-FIGHTING MEASURES

FLASH POINT:	>107°F
LOWER EXPLOSIVE LIMIT:	1.0 %
UPPER EXPLOSIVE LIMIT:	7.6 %
AUTOIGNITION TEMPERATURE:	not measured
FLAMMABILITY-OSHA:	COMBUSTIBLE - CLASS II
OSHA FLAMMABILITY CLASSIFICATION:	FLAMMABLE LIQUID

SUITABLE EXTINGUISHING MEDIA: Foam, carbon dioxide, dry powder, water spray

SPECIFIC HAZARDS DURING FIRE FIGHTING: In case of fire cool endangered containers with water. Closed container may rupture if strongly heated. Flammable liquid. Vapors may reach an ignition source and flash back. Explosive mixtures may form at temperatures at or above the flash point.

EXTINGUISHING MEDIA WHICH MUST NOT BE USED FOR SAFETY REASONS: Not applicable.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS: As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.



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HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, toxic gases or fumes.

OSHA FLAMMABLE CLASS: Combustible Liquid, Class II.

VI. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Wear suitable protective clothing, gloves and eye/face protection. Use self-contained breathing apparatus and chemically protective clothing. Evacuate personnel to safe areas.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Ventilate area, remove sources of spark or flame, and remove with inert absorbent.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

♦ **SMALL SPILL:** ABSORB LIQUID ON PAPER, VERMICULITE, FLOOR ABSORBENT OR OTHER ABSORBENT MATERIAL AND TRANSFER TO HOOD.

♦ **LARGE SPILL:** ELIMINATE ALL IGNITION SOURCES. PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE DIKE AREA OF SPILL TO PREVENT SPREADING, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND CLAY, EARTH, FLOOR ABSORBENT AND SHOVEL INTO CONTAINERS. PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER, BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED THAT A SPILL HAS OCCURED.

WASTE DISPOSAL METHOD:

♦ **SMALL SPILL:** ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPOURS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.

♦ **LARGE SPILLS:** DESTROY BY LIQUID INCINERATION. CONTAMINATED ABSORBENT MAY BE DEPOSITED IN LANDFILL IN ACCORDANCE WITH LOCAL STATE AND FEDERAL REGULATIONS.

VII. HANDLING AND STORAGE

HANDLING

General Procedures Handling

Advice on Safe Handling: Wear respiratory protection when spraying.
Ensure adequate ventilation.
Use only in well-ventilated areas. Avoid breathing vapors and/or aerosols. Avoid contact with skin and eyes. Emergency showers and eyed wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Avoid contact with eyes. Use personal protective equipment. When



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using, DO NO EAT, DRINK OR SMOKE.

Advice on protection against fire and explosion: Take precautionary measures against static charges; keep away from sources of ignition.

STORAGE

Requirements for storage areas and containers

Keep containers tightly closed in cool, well-ventilated place.

Storage Temperature:

Minimum: -34°C (-29.2 °F)

Maximum: 50°C (122°F)

Shelf life:

6 months @ 77°C (25°C): After the date of manufacture.

Further Information

Keep tightly sealed in original packing.

VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures

Provide for good ventilation if vapours/aerosol are formed.

Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

Personal protective equipment

General protective measures: Avoid contact with eyes and skin.

Hygiene measures: No smoking, eating or drinking allowed when using this product. Wash hands before breaks and at end of work shift or using the toilet.

Respiratory protection: Wear appropriate respirator when ventilation is inadequate. In case of formation of vapors/aerosols: respiratory protective equipment, cartridge for organic gases and vapors.

Hand protection: Gloves made of nitril (NBR)
Gloves made of butyl (IIR)
Neoprene gloves
The breakthrough time of the selected glove(s) must be greater than the intended use period.

Eye protection: Chemical resistant goggles must be worn.

Protective clothing: Light protective clothing is required.



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IX. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Liquid
Colour:	Transparent
Odour:	Characteristic
Water solubility:	Insoluble
pH:	Not applicable
Melting temperature:	Not measured
Boiling temperature:	252 - 336 °F
Vapour pressure:	Not measured
Flash point:	>107°F
Density:	0.8500 1,0800 g/cm ³
Viscosity:	12.0 - 20.0 seconds Ford cup 4.

X. STABILITY AND REACTIVITY

Thermal decomposition:	Not measured
Hazardous reactions:	No hazardous reactions know with proper storage and handling.
Hazardous polymerization:	No
Stability:	This product is stable under normal storage conditions.
Hazardous decomposition products:	<u>(BY FIRE, BURNING OR WELDING):</u> Carbon dioxide (CO ₂), carbon monoxide (CO), nitrogen oxides (NO _x), dense black smoke, hydrogen cyanide, isocyanate, isocyanic acid, other compounds not determined.
Materials to avoid:	water, amines, strong bases, alcohols, copper alloys.
Conditions to avoid:	Heat, open flame, arc or sparks.
Dangerous reactions:	Contact with moisture, other materials that react with isocyanates, or temperatures above 177°C (350°F) may cause polymerization.

XI. TOXICOLOGICAL INFORMATION

LD50 (ACUTE ORAL TOX):	Estimated to be greater than 5000 mg/kg (rats)
LD50 (ACUTE DERMAL TOX):	Estimated to be greater than 5000 mg/kg (rabbits)



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LD50 (ACUTE INHALATION TOX): CL50: 390-453 mg/m³, 4 h (rat, male/female)
EFFECTS OF CHRONIC EXPOSURE: Not available.
SENSITIZATION: dermal: sensitizer (guinea pig maximization test)
Skin: Non-sensitizer (guinea pig, Buehler)
Inhalation: Non-sensitizer (guinea pig)
CARCINOGENICITY: Not available.
REPRODUCTIVE TOXICITY: Not available.
TERATOGENICITY: Not available.
MUTAGENECITY: Genetic Toxicity in Vitro:
Ames: negative (Salmonella typhimurium, Metabolic
Activation: with / without)

XII. ECOLOGICAL INFORMATION

No ecotoxicological studies are available. The product is considered to be water pollutant. Do not allow to enter soil, waterways or waste water canal.

Ecotoxicity effects

Aquatic toxicity:

Biodegradation

0% Exposure time: 28 days, is not readily biodegradable.

Toxicity to fish:

CL0:> 100 mg / l (Zebra fish (Brachydanio rerio, 96 h)

Acute toxicity to aquatic invertebrates:

CE0:> 100 mg / L (water flea (Daphia magna), 48 h)

Toxicity to aquatic plants:

EC50:> 1.000 mg / L, (Green algae (Scenedesmus subspicatus), 72 h)

Toxicity to microorganisms

EC50:> 1.000 mg / L, (Microorganisms in Activated Sludge, 3 h)

Toxicity to other organisms:

No data available.

Persistence and degradability

Mobility:

No data available.

Bioaccumulation:

No data is available on the product itself.

COV's:

<545 g/L

XIII. DISPOSAL CONSIDERATIONS

Disposal of in accordance with local, state, and federal regulations.

Product disposal and

Disposal requirements:

In accordance with local authority regulations, take to special waste incineration plant.



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Contaminated packaging: If empty contaminated containers are recycled or disposed of, the receiver must be informed about possible hazards.

DO NOT HEAT OR CUT THE EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH.

XIV. TRANSPORT INFORMATION

DOT

Proper Shipping name: Reactor PEMEX RA-28
Class: 3
UN/ID No: 1263
Packing Group: III

IATA

Proper Shipping name: Reactor PEMEX RA-28
Class: 3
UN/ID No: 1263
Packing Group: III

IMDG

Proper Shipping name: Reactor PEMEX RA-28
Class: 3
UN/ID No: 1263
Packing Group: III

TDG

Proper Shipping name: Reactor PEMEX RA-28
Class: 3
UN/ID No: 1263
Packing Group: III

XV. REGULATORY INFORMATION

Federal regulations of the United States

Standard Classification Hazard Communication OSHA: **dangerous**

HMIS RATINGS

XVI. OTHER INFORMATION

NFPA RATING

HEALTH: 2
FLAMMABILITY: 3
PHYSICAL HAZARD: G

HEALTH: 2*
FLAMMABILITY: 3
REACTIVITY: 1



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0 = Insignificant
1 = Slight
2 = Moderate
3 = high
4 = Extreme

0 = Insignificant
1 = Slight
2 = Moderate
3 = High
4 = Extreme
* = Chronic health hazard

THE INFORMATION PROVIDED IN THIS SAFETY DATA SHEET IS CORRECT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF AT THE DATE OF ITS PUBLICATION. THE INFORMATION GIVEN IS DESIGNED ONLY AS A GUIDANCE FOR SAFE HANDLING, USE, PROCESSING, STORAGE, TRANSPORTATION, DISPOSAL AND RELEASE AND IS NOT TO BE CONSIDERED A WARRANTY OR QUALITY SPECIFICATION. THE INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS, UNLESS SPECIFIED IN THE TEXT.

<END OF MSDS>