




Material Safety Data Sheet

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|--|--|---------------|----|-------------|---|------------|---|---|--|
| NFPA  | HMIS <table border="1"><tr><td>Health Hazard</td><td>2*</td></tr><tr><td>Fire Hazard</td><td>4</td></tr><tr><td>Reactivity</td><td>1</td></tr></table> | Health Hazard | 2* | Fire Hazard | 4 | Reactivity | 1 | PPE  | Transport Symbol  |
| Health Hazard | 2* | | | | | | | | |
| Fire Hazard | 4 | | | | | | | | |
| Reactivity | 1 | | | | | | | | |

Issuing Date 20-Aug-2007

Revision Date

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Nudura Low Expansion Foam
Recommended Use Insulation

Supplier Address Convenience Products, division of Clayton Corp.
866 Horan Drive
Fenton, MO 63026-2416 USA
TEL: (636) 349-5855

Emergency Telephone Number Chemtrec 1-800-424-9300
(703) 527-3887 outside US

2. HAZARDS IDENTIFICATION

WARNING!

Emergency Overview

Contents under pressure.

Flammable gas.

Harmful by inhalation, in contact with skin and if swallowed.

May cause allergic respiratory reaction.

May cause sensitization by skin contact

Irritating to eyes, respiratory system and skin.

Persons allergic to isocyanates, and particularly those suffering from asthma or other respiratory conditions, should not work with isocyanates.

May cause drowsiness and dizziness.

May cause adverse cardiovascular effects.

Appearance Pale Amber

Physical State Liquid Aerosol

Odor Faint hydrocarbon

Potential Health Effects

Principle Routes of Exposure Inhalation, Skin contact, Eye contact.

Acute Toxicity

Eyes
Skin

Irritating to eyes. Risk of serious damage to eyes.

Harmful in contact with skin. Will bond to skin. May cause sensitization by skin contact.

Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Inhalation

Harmful by inhalation. Irritating to respiratory system. May cause allergic respiratory reaction.

Intentional misuse by deliberately concentrating and inhaling contents may be harmful or fatal.

Inhalation of vapors in high concentration may cause shortness of breath (lung edema). May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Ingestion

May be harmful if swallowed. May cause additional effects as listed under "Inhalation".

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Product may cure in the gastrointestinal tract and form an obstruction. May cause adverse cardiac effects, blood disturbances, and metabolic acidosis.

Chronic Effects

Repeated or prolonged exposure may cause central nervous system damage. Intentional misuse by deliberately concentrating and inhaling contents may be harmful or fatal. Chronic hydrocarbon abuse has been associated with irregular heart rhythms and potential cardiac arrest. Repeated or prolonged contact causes sensitization, asthma and eczemas.

| | |
|--|---|
| Aggravated Medical Conditions | Allergies. Skin disorders. Respiratory disorders. Central nervous system. Preexisting eye disorders. Kidney disorders. Liver disorders. |
| Interactions with Other Chemicals | Irritants. Sensitizers. Epoxies. Use of alcoholic beverages may enhance toxic effects. |
| Environmental Hazard | See Section 12 for additional Ecological information |

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|--|-------------|----------|
| Flame Retardant | Proprietary | 5-10 |
| Polymethylene polyphenylene isocyanate | 9016-87-9 | 10-30 |
| Methylene bisphenyl isocyanate (MDI) | 101-68-8 | 10-30 |
| Polyol blend | Proprietary | 10-30 |
| Isobutane | 75-28-5 | 5-10 |
| Methylenediphenyl diisocyanate | 26447-40-5 | 1-5 |
| Propane | 74-98-6 | 1-5 |
| Dimethyl ether | 115-10-6 | 5-10 |

4. FIRST AID MEASURES

| | |
|-----------------------------------|--|
| General Advice | Call 911 or emergency medical service. Remove and isolate contaminated clothing and shoes. |
| Eye Contact | Call a physician immediately. Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. |
| Skin Contact | Wash skin with soap and water. If symptoms persist, call a physician. Remove and wash contaminated clothing before re-use. |
| Inhalation | Move victim to fresh air. Apply artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. |
| Ingestion | Call a physician or Poison Control Center immediately. May produce an allergic reaction. Do not induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. |
| Notes to Physician | Keep victim warm and quiet. |
| Protection of First-aiders | Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. |

5. FIRE-FIGHTING MEASURES

| | |
|-------------------------------------|--|
| Flammable Properties | Containers may explode when heated. |
| Flash Point | -104°C / -155°F |
| Suitable Extinguishing Media | Use extinguishing agent suitable for type of surrounding fire. Dry chemical or CO2. Water spray, fog or regular foam. Move containers from fire area if you can do it without risk. Damaged cylinders should be handled only by specialists. |
| Explosion Data | |
| Sensitivity to mechanical impact | None |
| Sensitivity to static discharge | Yes. |

Specific Hazards Arising from the Chemical

Some may burn but none ignite readily. Ruptured cylinders may rocket.

Protective Equipment and Precautions for Firefighters

Wear self-contained breathing apparatus and protective suit.

| | | | | |
|--------------------|-------------------------|-----------------------|--------------------|--|
| <u>NFPA</u> | Health Hazard 2 | Flammability 4 | Stability 1 | Physical and Chemical Hazards - |
| <u>HMIS</u> | Health Hazard 2* | Flammability 4 | Stability 1 | Personal Precautions - |

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|--|
| Personal Precautions | Remove all sources of ignition. Evacuate personnel to safe areas. Ensure adequate ventilation. Take precautionary measures against static discharges. Use personal protective equipment. Keep people away from and upwind of spill/leak. |
| Methods for Containment | If possible, turn leaking containers so that gas escapes rather than liquid. Allow substance to evaporate. Dike to collect large liquid spills. |
| Methods for Cleaning Up | Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Do not direct water at spill or source of leak. |
| Other Information | Ventilate the area. |

7. HANDLING AND STORAGE

| | |
|-----------------|---|
| Handling | Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition. Use only in an area containing flame proof equipment. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Avoid breathing vapors or mists. Contents under pressure. Do not puncture or incinerate cans. Do not stick pin or any other sharp object into opening on top of can. |
| Storage | Keep containers tightly closed in a cool, well-ventilated place. Keep out of the reach of children. Keep at temperatures below 48.8 °C / 120 °F. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|--------------------------------------|------------------|---|----------------------|
| Methylene bisphenyl isocyanate (MDI) | TWA: 0.005 ppm | Ceiling: 0.02 ppm Ceiling: 0.2 mg/m ³ | 75 mg/m ³ |
| Isobutane | TWA: 1000 ppm | N/A | N/A |
| Propane | TWA: 1000 ppm | TWA: 1000 ppm | 2100 ppm |

NIOSH IDLH: *Immediately Dangerous to Life or Health*

| | |
|--------------------------------------|--|
| Engineering Measures | Showers Eyewash stations Ventilation systems |
| Personal Protective Equipment | |
| Eye/Face Protection | Safety glasses with side-shields. |
| Skin and Body protection | Impervious gloves. Lightweight protective clothing. |
| Respiratory Protection | If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Respiratory protection must be provided in accordance with current local regulations. |
| Hygiene Measures | When using, do not eat, drink or smoke. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|--|--------------------------|---------------------------------|-------------------|
| Appearance | Pale Amber | Odor | Faint hydrocarbon |
| Odor Threshold | No information available | Physical State | Liquid Aerosol |
| pH | No information available | | |
| Flash Point | -104°C / -155°F | Autoignition Temperature | Not applicable |
| Decomposition temperature | No data available | Boiling Point/Range | -42°C / -44°F |
| Melting Point/Range | No data available | | |
| Flammability Limits in Air | No data available | Explosion Limits | No data available |
| Specific Gravity | 1.05 | Water Solubility | Not Compatible |
| Solubility | Compatible. | Evaporation Rate | No data available |
| Vapor Pressure | No data available | Vapor Density | No data available |
| VOC Content | Not applicable | EPA VOC (g/l) | 155 |
| Partition Coefficient (n-octanol/water) | No data available | | |

10. STABILITY AND REACTIVITY

| | |
|---|--|
| Stability | Stable under recommended storage conditions |
| Conditions to Avoid | Keep away from open flames, hot surfaces and sources of ignition. Temperatures above 48.8 °C / 120 °F. |
| Incompatible Products | Water. Alcohols. Strong bases. Strong oxidizing agents. Finely powdered metals. |
| Hazardous Decomposition Products | Carbon monoxide (CO), Carbon dioxide (CO ₂), Nitrogen oxides (NO _x), Hydrogen cyanide. |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION**Acute Toxicity**

Product Information Product does not present an acute toxicity hazard based on known or supplied information.

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|--|--------------------|--|-----------------------------------|
| Flame Retardant | 1850 mg/kg (Rat) | 2000 mg/kg (Rat) 23700 mg/kg (Rabbit) | 5.22 mg/L (Rat) 4 h |
| Polymethylene polyphenylene isocyanate | 49 g/kg (Rat) | 9400 mg/kg (Rabbit) | 490 mg/m ³ (Rat) 4 h |
| Methylene bisphenyl diisocyanate (MDI) | 9200 mg/kg (Rat) | | |
| Polyol blend | 64 mL/kg (Rat) | 20 mL/kg (Rabbit) | |
| Isobutane | | | 658 mg/L (Rat) 4 h |
| Methylenediphenyl diisocyanate | | 6200 mg/kg (Rabbit) | 0.369 mg/L (Rat) 4 h |
| Propane | | 658 mg/kg (Rat) | |
| Dimethyl ether | | | 308.5 mg/L (Rat) 4 h |

Subchronic Toxicity (28 days)

| | |
|--|--|
| Chronic Toxicity | Repeated or prolonged exposure may cause central nervous system damage. Intentional misuse by deliberately concentrating and inhaling contents may be harmful or fatal. Chronic hydrocarbon abuse has been associated with irregular heart rhythms and potential cardiac arrest. Repeated or prolonged contact causes sensitization, asthma and eczemas. |
| Carcinogenicity | There are no known carcinogenic chemicals in this product. |
| <u>Mutagenicity</u> | |
| Reproductive Toxicity | This product does not contain any known or suspected reproductive hazards |
| Target Organ Effects | Central nervous system (CNS), Eyes, Respiratory system, Immune system, Skin, Cardiovascular system. |
| Endocrine Disruptor Information | This product does not contain any known or suspected endocrine disruptors |

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|--------------------------------|-----------------------|------------------|----------|----------------------------|
| Flame Retardant | EC50 > 10 mg/L 72 h | | | EC50 3.9 - 5.5 mg/L 48 h |
| Methylenediphenyl diisocyanate | EC50 = 3230 mg/L 96 h | | | EC50 > 1000 mg/L 24 h |

| Chemical Name | Log Pow |
|----------------|---------|
| Isobutane | 2.88 |
| Propane | 2.3 |
| Dimethyl ether | -0.18 |

13. DISPOSAL CONSIDERATIONS

| | |
|-------------------------------|---|
| Waste Disposal Method | This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Should not be released into the environment. Dispose of in accordance with local regulations. Allow foam to cure before disposal. |
| Contaminated Packaging | Dispose of in accordance with local regulations. |
| US EPA Waste Number | D001 |

14. TRANSPORT INFORMATION

DOT

| | |
|-----------------------------|---------------------------|
| Proper Shipping Name | Consumer commodity |
| Hazard Class | ORM-D |
| Description | Consumer commodity,ORM-D, |

TDG

| | |
|-----------------------------|---------------------|
| Proper Shipping Name | Aerosols |
| Hazard Class | 2.1 |
| UN-No | UN1950 |
| Description | AEROSOLS,2.1,UN1950 |

MEX

| | |
|-----------------------------|---------------------|
| Proper Shipping Name | Aerosols |
| Hazard Class | 2.1 |
| UN-No | UN1950 |
| Description | UN1950 Aerosols,2.1 |

ICAO

14. TRANSPORT INFORMATION

| | |
|-----------------------------|--------------------------------|
| UN-No | UN1950 |
| Proper Shipping Name | Aerosols |
| Hazard Class | 2.1 |
| Description | Aerosols,UN1950 |
| <u>IATA</u> | |
| UN-No | UN1950 |
| Proper Shipping Name | Aerosols, flammable |
| Hazard Class | 2.1 |
| ERG Code | 10L |
| Description | UN1950,Aerosols, flammable,2.1 |
| <u>IMDG/IMO</u> | |
| Proper Shipping Name | Aerosols |
| Hazard Class | 2 |
| UN-No | UN1950 |
| EmS No. | F-D, S-U |
| Description | UN1950, Aerosols,2 |
| <u>RID</u> | |
| Proper Shipping Name | Aerosols |
| Hazard Class | 2 |
| UN-No | UN1950 |
| Classification Code | 5A |
| Description | UN1950 Aerosols,2,,RID |
| ADR/RID-Labels | 2 |
| <u>ADR</u> | |
| Proper Shipping Name | Aerosols |
| Hazard Class | 2 |
| UN-No | UN1950 |
| Classification Code | 5A |
| ADR/RID-Labels | 2 |
| <u>ADN</u> | |
| Proper Shipping Name | Aerosols |
| Hazard Class | 2 |
| Classification Code | 5A |
| Special Provisions | 63, 190, 191, 277, 913 |
| Description | UN1950 Aerosols,2, |
| Hazard Labels | 2 |
| Limited Quantity | See SP277 |

15. REGULATORY INFORMATION**International Inventories**

| | |
|----------------------|----------|
| TSCA | Complies |
| DSL | Complies |
| EINECS/ELINCS | Complies |
| ENCS | Complies |
| CHINA | Complies |
| KECL | Complies |
| PICCS | Complies |
| AICS | Complies |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values |
|--|------------|----------|-----------------------------|
| Polymethylene polyphenylene isocyanate | 9016-87-9 | 10-30 | 1.0 |
| Methylene bisphenyl isocyanate (MDI) | 101-68-8 | 10-30 | 1.0 |
| Methylenediphenyl diisocyanate | 26447-40-5 | 1-5 | 1.0 |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | Yes |
| Fire Hazard | Yes |
| Sudden Release of Pressure Hazard | Yes |
| Reactive Hazard | No |

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|--------------------------------------|--------------------------|------------------------------------|
| Methylene bisphenyl isocyanate (MDI) | 5000 lb | |

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|--------------------------------------|---------------|------------|--------------|----------|--------------|
| Dimethyl ether | X | X | X | | X |
| Propane | X | X | X | | X |
| Isobutane | X | X | X | | |
| Methylene bisphenyl isocyanate (MDI) | X | X | X | X | X |

International Regulations**Mexico - Grade**

The exposure limits values for 101-68-8 are listed under two synonyms:
 Diphenylmethane diisocyanate - 0.02 ppm TWA; 0.2 mg/m³ TWA
 Methylene bisphenyl isocyanate - 0.005 ppm TWA; 0.051 mg/m³ TWA

| Chemical Name | Carcinogen Status | Exposure Limits |
|--------------------------------------|-------------------|---|
| Methylene bisphenyl isocyanate (MDI) | | Mexico: TWA= 0.2 mg/m ³ Mexico: TWA= 0.02 ppm Mexico: TWA= 0.005 ppm Mexico: TWA= 0.051 mg/m ³ |

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class

- A Compressed gases
- B5 Flammable aerosol
- D2A Very toxic materials



| Chemical Name | NPRI |
|--------------------------------------|------|
| Methylene bisphenyl isocyanate (MDI) | X |

Legend

NPRI - National Pollutant Release Inventory

16. OTHER INFORMATION**Issuing Date** 27-Feb-2007**Revision Date****Revision Note** No information available**Disclaimer**

The information provided on this MSDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of MSDS