Section 1: IDENTIFICATION

GSH Product Identifier: Progressive Materials - Part A Iso
Other means of Identification: Polymeric MDI

Relevant Identified uses of the substance or mixture and uses advised against

Product Use: Component of a Foam Insulation System
Area of Application: Industrial or residential applications
Supplier/Manufacturer: Progressive Materials
540 Central Court
New Albany, IN 47150
Emergency Phone (1-800-424-9300

Section 2: Hazard Identification

GHS Classification:

Acute toxicity (Inhalation): Category 4
Specific target organ toxicity - single exposure: Category 3 (Respiratory system)
Respiratory sensitization: Category 1
Specific target organ toxicity - repeated exposure: Category 1 (Respiratory Tract)
Skin irritation: Category 2 Skin sensitization: Category 1
Eye irritation: Category 2B

GHS label elements

Hazard Pictograms:

Signal word: Danger

Hazard statements: Harmful if inhaled.
May cause respiratory irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled. Causes skin irritation.
May cause an allergic skin reaction. Causes eye irritation.
Causes damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.

Precautionary statements: Prevention: Avoid breathing dust, mist, gas, vapors or spray. Do not eat, drink or smoke when using this product.

Wash skin and face thoroughly after handling. Use only outdoors or in a well-ventilated area.

Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves. In case of inadequate ventilation wear respiratory protection. The type of respiratory protection selected must comply with the requirements set forth in OSHA's Respiratory Protection Standard (29 CFR 1910.134) or regional standards. For additional details, see section 8 of the SDS.

Section 3: Composition/information on ingredients

Hazardous Components

Weight Percent	Components	Cas Number	Classification
50-60%	Polymeric Diphenylmethane Diisocyanate (pMDI)	9016-87-9	Acute toxicity Category 4 Inhalation. Skin irritation Category 2. Eye irritation Category 2B. Respiratory sensitization Category 1. Skin sensitization Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system. Specific target organ toxicity - repeated exposure Category 1 Respiratory Tract
35-45%	4,4'-Diphenylmethane Diisocyanate (MDI)	101-68-8	Acute toxicity Category 4 Inhalation. Skin irritation Category 2. Eye irritation Category 2B. Respiratory sensitization Category 1. Skin sensitization Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system. Specific target organ toxicity - repeated exposure Category 1 Respiratory Tract.
1-5%	2,4'-Diphenylmethane Diisocyanate (MDI)	5873-54-1	Acute toxicity Category 4 Inhalation. Skin irritation Category 2. Eye irritation Category 2B. Respiratory sensitization Category 1. Skin sensitization Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system. Specific target organ toxicity - repeated exposure Category 1 Inhalation Respiratory Tract.
0.1 - 1%	2,2'-Diphenylmethane Diisocyanate	2536-05-2	Acute toxicity Category 4 Inhalation. Skin irritation Category 2. Eye irritation Category 2B. Respiratory sensitization Category 1. Skin sensitization Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system. Specific target

			organ toxicity - repeated exposure Category 1 Inhalation Respiratory Tract.

Section 4: FIRST AID MEASURES

Description of necessary first aid measures

Skin: Clean exposed area with soap and lukewarm water. Remove contaminated clothing. Seek medical attention. Wash contaminated clothes before re-use.

Eyes: Immediately flush thoroughly with water for at least 15 minutes lifting eye lids occasionally. Get medical attention.

Inhalation: Remove victim to fresh air; extreme asthmatic reactions that may occur in sensitized persons can be life threatening. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours.

Ingestion: Do Not induce vomiting. Wash mouth out with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Seek medical attention immediately.

Most important symptoms/effects, acute and delayed
Potential acute health effects

Acute: Diisocyanate vapors or mist at concentrations above the TLV or PEL can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible. Causes skin irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove. Contact with MDI can cause discoloration.
Causes eye irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing. May cause irritation of the digestive tract. Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Indication of immediate medical attention and special treatment needed, if necessary
Notes to Physician: Notes to Physician Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing 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. Inducing vomiting is contraindicated because of the irritating nature of the compound. Inhalation: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate. Specific Treatments: None
Protection of first aiders: Contact a doctor or poison control center.

Section 5: FIRE FIGHTING MEASURES

Means of Extinction: Suitable extinguishing media: Dry chemical, Carbon dioxide (CO2), Foam, water spray for large fires.

Specific hazards arising from the chemical: During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Exposure to heated diisocyanate can be extremely dangerous.

Special protective equipment and precautions for fire-fighters:
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk without suitable training. Fire fighters should wear appropriate protective equipment and self contained breathing apparatus. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. Prevent fire extinguishing water from contaminating surface water or the ground water system.

Section 6: ACCIDENTAL RELEASE MEASURES

Spill Procedure:
Clean up personnel must wear protective equipment to prevent contact with the product. Evacuate the area of all unnecessary personnel. Stop spill at source. Ventilate and remove ignition sources. Control the source of the leak. Contain the released material by damming, diking, retaining, or diverting into an appropriate containment area. Absorb or pump off as much of the spilled material as possible. When using absorbent, completely cover the spill area with suitable absorbent material (e.g., vermiculite, kitty litter, Oil-Dri®, etc…). Allow for the absorbent material to absorb the spilled liquid. Shovel the absorbent material into an approved metal container (i.e., 55-gallon salvage drum). Do not fill the container more than 2/3 full to allow for expansion, and do not tighten the lid on the container. Repeat

application of absorbent material until all liquid has been removed from the surface.
Decontaminate the spill surface area using a neutralization solution (see list of solutions on the SDS); scrubbing the surface with a broom or brush helps the decontamination solution to penetrate into porous surfaces. Wait at least 15 minutes after first application of the neutralization solution. Cover the area with absorbent material and shovel this into an approved metal container.
Apply lid loosely to metal waste container (do not tighten the lid because carbon dioxide gas and heat can be generated from the neutralization process). With the lid still loosely in place, move the container to an isolated, well-ventilated area to allow release of carbon dioxide. After 72 hours, seal the container, and properly dispose of the waste material and any contaminated equipment (i.e., broom or brush) in accordance with existing federal, provincial and local regulations.

Neutralization solutions include:
-Easy Off Grill and Oven Cleaner or Easy Off Fume Free oven cleaner
-A mixture of 90% Fantastic Heavy Duty All Purpose Cleaner and 10% household ammonia.
It may take 2 or more applications of the neutralization solution to decontaminate the surface.

Personal Precautions, protective equipment and emergency procedures:
Wear suitable protection clothing, gloves and eye/face protection. Ventilate the area.

Environmental precautions: Should not be released into the environment. Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

Methods and material for containment and cleaning up:
Suitable material for taking up: inert absorbing material, e.g., vermiculite, kitty litter, Oil-Dri®, etc. Pick up and transfer to properly labelled containers. Ventilate the area.

Section 7: HANDLING AND STORAGE

Precautions for safe handling:

Protective Measures:
Put on appropriate personal protective equipment. Do not handle until all safety precautions have been read and understood. Avoid contact with skin and eyes, inhalation of vapours and mists. Use only with adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear appropriate respirator when ventilation is inadequate. Wear respiratory protection if material is heated, sprayed, used in a confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated

inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Do not breathe smoke and gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Keep in the original container and keep tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene:
Eating, drinking and smoking should be prohibited in areas where this material is handled, stored, and processed. Workers should wash hands before, eating, drinking or smoking. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including any incompatibilities:
Store product in accordance with local regulation. Store product at room temperature away from heat and moisture. Store product in original container protected from direct sunlight in a dry, cool, and well ventilated area with local exhaust. Keep away from incompatible materials and food and drink. Keep container tightly closed and sealed until ready for use.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTIONS

Control Parameters

Component	Cas Number	Exposure	Concentration
4,4'-Diphenylmethane Diisocyanate (MDI)	101-68-8	ACGIH	TWA 0.005 ppm

Appropriate Engineering Controls
Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, etc) below recommended exposure limits. Handle in accordance with good industrial hygiene and safety practice.

Individual Protection Measures
Eye Protection: When directly handling liquid product, eye protection is required, such as chemical safety goggles or chemical safety goggles in combination with a full face shield when there is a greater risk of splash.

Protection for skin: Avoid all skin contact. Depending on the conditions of use, cover as much of the exposed skin area as possible with appropriate clothing to prevent skin contact. Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanate.

Protection for hands: Gloves should be worn. Nitrile rubber showed excellent resistance, butyl rubber, neoprene and PVB are also effective.

Respiratory Protection
Airborne MDI concentrations greater than the ACGIH TLV-TWA (TLV) or OSHA PEL-C (PEL) can occur in inadequately ventilated environments when MDI is sprayed, aerosolized, or heated. In such cases, respiratory protection must be worn. The type of respiratory protection selected must comply with the requirements set forth in OSHA's Respiratory Protection Standard (29 CFR 1910.134).

Hygiene Measures: Wash hands, forearms and face thoroughly after handling chemical products.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Colour: Brown Liquid	Vapour Pressure: < 0.0001 mmHg @ 25 °C (77 °F)
Physical State: Liquid	Vapour Density: Not available
Odour: Musty	Relative Density: 1.234 g/cm³ @ 20°C (68°F)
Odour Threshold: Not available	Solubility in water: Insoluble - Reacts slowly with water to liberate CO2 gas
pH: Not applicable	Partition coefficient: Not available
Melting Point/Freezing Point: Not applicable	Auto Ignition Temp: Not available
Initial Boiling Point: 208°C (406.4°F)	Decomposition Temp: Not available
Flash Point: 198°C (388.4°F)	Dynamic Viscosity: 150 - 250 mPa.s @ 25°C (77°F)
Evaporation Rate: Not available	Specific Gravity: 1.24 @ 25°C (77°F)
Lower Flammable Limit: Not available	Explosive Properties: Not available
Upper Flammable Limit: Not available	

Section 10: STABILITY AND REACTIVITY

Chemical Stability: This is a stable material at room temperature.
Possibility of Hazardous Reactions: Contact with moisture, other materials that react with isocyanates, or temperatures above 350°F(177°), may cause polymerization.
Conditions to avoid: Avoid high temperatures and heat.
Incompatibility (Materials to avoid): avoid water, amines, strong bases, alcohols, copper alloys.
Hazardous decomposition Products: By Fire and high heat: Carbon dioxide, carbon monoxide, oxides of nitrogen, dense black smoke, isocyanate, isocyanic acid, other undetermined compounds.

Section 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects

Toxicological Information of the mixture:

Acute Oral Toxicity: LD50: > 2000 mg/kg (rat, male/female)

Acute Inhalation Toxicity:
LC50: 0.49 mg/l, 490 mg/m3, 4 h, aerosol (rat)
The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Acute Dermal Toxicity:
LD50: > 9400 mg/kg (rabbit, male/female) (OECD Test Guideline 402)

Skin Irritation: rabbit, slightly irritating.

Repeated Dose Toxicity: 90 Days, inhalation: NOAEL: 1 mg/m3, (rat, Male/Female, 6 hrs/day 5 days/week). Irritation to lungs and nasal cavity.

2 years, inhalation: NOAEL: 0.2, (rat, Male/Female, 6 hrs/day 5 days/week). Irritation to lungs and nasal cavity.

Mutagenicity:
Genetic Toxicity in Vitro:
Bacterial - gene mutation assay: negative (Salmonella typhimurium, Metabolic Activation: with/without)

Carcinogenicity:
Rat, Male/Female, inhalation, 2 Years, 6 hrs/day 5 days/week
LOAEL: 6mg/l

Polymeric MDI has been classified as IARC Group 3 ("Not classifiable as to its carcinogenicity to humans") (1999) indicating there is inadequate evidence available to describe the carcinogenic potential. Epidemiological studies found no association between isocyanates and cancer. In chronic exposure studies in rodents, pMDI produced tumors only at the highest exposure level of 6 mg/m3. This exposure level is significantly above the TLV for MDI (0.051 mg/m3). Based on the weight of the evidence, a determination of not classified for carcinogenicity is justified.

Developmental Toxicity/Teratogenicity:
Rat, female, inhalation, gestation days 6-15, 6 hrs/day, NOAEL

(teratogenicity): 12 mg/m3, NOAEL (maternal): 4 mg/m3
No Teratogenic effects observed at doses tested., Fetotoxicity seen only with maternal toxicity.

Toxicological Information of 4,4′-Diphenylmethane Diisocyanate (MDI):

Acute Oral Toxicity: LD50:>7616 mg/kg(rat) (OECD Test Guideline 401)

LC50: 0.368 mg/l, 4 h, dust/mist(rat, male) (OECD Test Guideline 403)
The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Acute Dermal Toxicity:
LD50: > 9400 mg/kg (rabbit, male/female) (OECD Test Guideline 402)
Studies of a comparable product.

Skin Irritation:
rabbit, Draize Test, Slightly irritating
human, irritating

Eye Irritation:
rabbit, Draize, Moderately irritating
human, irritating

Sensitization:
Skin sensitization (local lymph node assay (LLNA)):: positive (Mouse, OECD Test Guideline 429)
Respiratory sensitization: positive (Guinea pig)

Repeated Dose Toxicity:
90 Days, inhalation: NOAEL: 0.3 mg/m3, (rat, Male/Female, 18 hrs/day, 5 days/week)
Irritation to lungs and nasal cavity.
(Human)
Irritation to lungs and nasal cavity.

Mutagenicity:
Genetic Toxicity in Vitro:
Ames: (Salmonella typhimurium, Metabolic Activation: with/without)
Positive and negative results were reported. The use of certain solvents which rapidly hydrolyze diisocyanates is suspected of producing the positive mutagenicity results.

Genetic Toxicity in Vivo:
Micronucleus Assay: (Mouse)negative
Micronucleus test: negative (rat, male, Inhalative
(exposure period: 3x1h/day over 3 weeks))

negative

Carcinogenicity:
rat, Female, inhalation, 2 Years, 17 hrs/day, 5 days/week negative

Other Relevant Toxicity Information:
May cause irritation of respiratory tract.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity effects:
Acute and prolonged Toxicity to Fish: LC0: > 1,000 mg/l (Danio rerio (zebra fish), 96 h)
LC0: > 3,000 mg/l (Oryzias latipes (Orange-red killifish), 96 h)

Acute toxicity to aquatic invertebrates:
EC50: > 1,000 mg/l (Water flea (Daphnia magna), 24 h)

Toxicity to Aquatic Plants:
NOEC: 1,640 mg/l, End Point: growth (Green algae (Scenedesmus subspicatus),72 h)

Toxicity to microorganisms:
EC50: > 100 mg/l, (activated sludge, 3 h)

Biodegradation: 0%, Exposure time: 28 days, ie. Not degradable

Bioaccumulative Potential: Oncorhynchus mykiss (rainbow trout), exposure time: 112 days, <1, BCF does not bioaccumulate.

Mobility in Soil: Not available

Other adverse effects: Not available

Section 13: DISPOSAL CONSIDERATIONS

Disposal Procedure:
Comply with Federal, provincial, and local regulations on reporting releases.
Consult your local or regional authorities.

Section 14: TRANSPORT INFORMATION

	Land Transport (U.S. DOT)	Sea Transport (IMDG)	Air Transport (ICAO/IATA)
UN number	Not regulated for ground shippments in non bulk (<119 gallons)packaging or in quantities below the Reportable Quantity	Not classified as dangerous for transport	
Proper Shipping Name			
Transport Hazard Classes			
Packing Group			
Environmental Hazards			
Special Precautions for user			

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable
*For bulk packages: UN 3082, Environmentally hazardous substance, liquid, n.o.s. (contains 4,4'-Methylenediphenyl diisocyanate (MDI)), 9 III, RQ.

Section 15: REGULATORY INFORMATION

Safety, Health and Environmental Regulations/legislation specific for the substance or mixture:
TSCA (Toxic Substance Control Act)- Inventory Status: All components listed or polymer exempt.
Designated Hazardous Substances and Reportable Quantities (40 CFR 302.4):

Chemical Name	CAS No.	Typical %wt.	RQ (Pounds)
4,4'-Methylenediphenyl diisocyanate	101-68-8	30-70	5000

SARA 311/312 – Hazard Categories:

☐ Fire ☐ Sudden Release ☐ Reactivity X Immediate(acute) X Chronic (delayed)

SARA 313 – Toxic Chemicals (40 CFR 372):

Chemical Name	CAS No.	Typical %wt.
Polymethylene polyphenyl isocyanate	9016-87-9	30-70
4,4'-Methylenediphenyl diisocyanate	101-68-8	30-70

SARA 302 – Extremely Hazardous Substances (40 CFR 355):

Chemical Name	CAS No.	Typical %wt.	RQ (Pounds)	TPQ (Pounds)
None	---	---	---	---

Proposition 65 (California):

Chemical Name	CAS No.	Typical %wt.		
None	---	---		

Section 16: OTHER INFORMATION

DATE: October 2, 2023 **REVISION** 1