SECTION 1: IDENTIFICATION

1.1 PRODUCT IDENTIFIER

Product Name: GenFlex Quick Dual Part 1
Product Code: W59RACIAPC1, W59RACIATJ1

1.2 RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Product Use: Part 1 of a two-component polyurethane adhesive
Use this product in accordance with all local, regional, national and international regulations.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Name/Address: Distributed by GenFlex Roofing Systems
an operating division of Firestone Building Products Company, LLC
200 4th Avenue South
Nashville, TN 37201
Telephone Number: Technical: 1-800-443-4272 • Français: 1-888-292-6265
Email: genflexmsds@bfdp.com
Website: http://www.genflex.com

1.4 EMERGENCY TELEPHONE NUMBER

For Chemical Emergency
Spill, Leak, Fire, Exposure, or Incident
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1-703-527-3887 (collect calls accepted)

SECTION 2: HAZARD(S) IDENTIFICATION

2.1 CLASSIFICATION OF THE CHEMICAL

Hazard class:

HAZARD CLASSIFICATION	CATEGORY
Acute Toxicity - Inhalation	4
Skin Corrosion/Irritation	2
Eye Damage/Irritation	2
Sensitization - Respiratory	1
Sensitization - Skin	1
STOT SE - Specific Toxic Organ Toxicity (Single Exposure)	3
STOT RE - Specific Toxic Organ Toxicity (Repeated Exposure)	2
Gases Under Pressure	-

2.2 LABEL ELEMENTS

Hazard pictogram: GHS04, GHS07, GHS08

Signal word:	Danger
Hazard statement:	Contains gas under pressure; may explode if heated Causes skin irritation May cause an allergic skin reaction Causes serious eye irritation Harmful if inhaled May cause allergy or asthma symptoms or breathing difficulties if inhaled May cause respiratory irritation May cause damage to organs <Respiratory System> through prolonged or repeated exposure <inhalation> HNOC - May displace oxygen and cause rapid suffocation
Prevention:	Do not breathe dust/fume/gas/mist/vapors/spray. Wash 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/eye protection/face protection. In case of inadequate ventilation, wear respiratory protection.
Response:	Specific treatment (see Section 8 on this label). If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation or a rash occurs: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If experiencing respiratory symptoms: Call a poison/doctor. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Storage:	Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from sunlight. Store in a well-ventilated place.
Disposal:	Dispose of contents and container in accordance with all local, regional, national and international regulations.

2.3 ADDITIONAL INFORMATION

Main symptoms:	Prolonged exposure may cause chronic effects. Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause damage to organs <Respiratory System> through prolonged or repeated exposure <inhalation>. Harmful if inhaled. May cause respiratory irritation. May cause allergic skin reaction. Dermatitis. Rash. Causes skin irritation. May cause redness and pain. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Animal tests and other research indicate that skin contact with isocyanates can play a role in causing isocyanate sensitization and respiratory reaction. Lung damage and respiratory sensitization may be permanent.
Hazards not otherwise specified:	May displace oxygen and cause rapid suffocation

<15% of the mixture consists of ingredient(s) of unknown acute toxicity

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 MIXTURES

Material	CAS No.	Weight %*
Polymeric Diphenylmethane Diisocyanate (pMDI)	9016-87-9	<50%%
4,4'-Diphenylmethane Diisocyanate (MDI)	101-68-8	25-50%
Norflurane	811-97-2	10-25%
Other components below reportable levels	--	<15%

*The exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

SECTION 4: FIRST-AID MEASURES

4.1 DESCRIPTION OF THE FIRST AID MEASURES

General information: Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison center immediately.

Skin contact: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth. Get medical attention if symptoms occur.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Prolonged exposure may cause chronic effects.
Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause damage to organs <Respiratory System> through prolonged or repeated exposure <inhalation>.
Harmful if inhaled.
May cause respiratory irritation.
May cause allergic skin reaction. Dermatitis. Rash.
Causes skin irritation. May cause redness and pain.
Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Skin contact with isocyanates can cause discoloration. Animal tests and other research indicate that skin contact with isocyanates can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

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.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENTS NEEDED

Note to physicians: Treat symptomatically. Symptoms may be delayed.

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

SECTION 5: FIRE-FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

General hazards: During fire, gases hazardous to health may be formed. May react explosively even in the absence of air at elevated pressure and/or temperature.

Suitable extinguishing media: Foam, CO2 or dry powder. Water spray may be used if no other available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous. Prevent washings from entering water courses, keep fire exposed containers cool by spraying with water.

Unsuitable extinguishing media: Do not use water jet as an extinguisher as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Specific hazards: During fire, gases hazardous to health may be formed. Contents under pressure. Pressurized container may explode when exposed to heat or flame.

Products of combustion: May include, and are not limited to: carbon oxides (CO, CO2) nitrogen oxides (NO, NO2 etc.) hydrocarbons, isocyanate vapors, and hydrogen cyanide.

5.3 Special protective equipment and precautions for fire-fighters (PPE)

Special protective equipment for fire-fighters:

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special fire-fighting procedures: Keep upwind of fire. Move containers from fire area if you can do it without risk.

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.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Immediately contact emergency personnel. Evacuate the area. Keep upwind to avoid inhalation of vapors. Clean-up should only be performed by trained personnel. People dealing with major spillages should wear full protective clothing including respiratory protection. Use suitable protective equipment (section 8). Keep unauthorized persons away.

Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Emergency personnel

need self-contained breathing equipment. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained.

6.2 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING - UP

Methods for containment: Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

Methods for cleaning-up: Stop the flow of material, if this is without risk. Dike far ahead of spill for later disposal. Following product recovery, flush area with water. For waste disposal, see Section 13 of the SDS.

If the product is in its solid form: Spilled isocyanate flakes should be picked up carefully. The area should be vacuum cleaned to remove remaining dust particles completely.
If the product is in its liquid form: Absorb spillages onto sand, earth or any suitable adsorbent material. Leave to react for at least 30 minutes. Do NOT absorb onto sawdust or other combustible materials. Shovel into open-top drums for further decontamination. Wash the spillage area with water. Test atmosphere for isocyanate vapour. Neutralise small spillages with decontaminant. Remove and dispose of residues. The compositions of liquid decontaminants are : (percentages by weight or volume) :
Decontaminant 1 : *- sodium carbonate : 5 - 10 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %
Decontaminant 2 : *- concentrated ammonia solution : 3 - 8 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %
Decontaminant 1 reacts slower with diisocyanates but is more environmentally friendly than decontaminant 2.
Decontaminant 2 contains ammonia. Ammonia presents health hazards. (See supplier safety information.)

Large spills: Stop the flow of material, if this is without risk. Wet down with water and dike for later disposal. Sweep or shovel up material and place in a clearly labeled container for waste. Following product recovery, flush area with water.

Small spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions: Avoid discharge into drains, water courses or onto the ground.

SECTION 7: HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Precautions for Safe handling: Observe good industrial hygiene practices.
Do not breathe vapors, mists, or dusts. Use adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in 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 be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do NOT breathe smoke and gases created by over heating 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.
General hygiene advice:	Ensure that medical personnel are aware of the materials(s) involved, and take precautions to protect themselves.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Safe storage:	Store away from incompatible materials. Minimum: 50°F (10°C) Maximum: 86°F (30°C)
Specific use:	One component of a two-component polyurethane system
Technical measures:	No specific recommendations.
Incompatible materials:	Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols. Moisture sensitive.
Safe packaging material:	No specific recommendations.
Precautions:	Use personal protective recommended in Section 8 of the SDS.
Safe handling advice:	Observe good industrial hygiene practices.
Suitable storage conditions:	Store away from incompatible materials. Store in tightly closed containers to prevent moisture contamination. Do NOT reseal if contamination is suspected.
Handling-technical measures:	No specific recommendations.
Local and general ventilation:	Provide adequate ventilation.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Control parameters: Follow standard monitoring procedures.

Exposure limits:

Polymeric Diphenylmethane Diisocyanate (pMDI)

OSHA:
PEL-C ppm: 0.02
PEL-C mg/m3: 0.2
NIOSH:
REL-TWA ppm: 0.005
REL-TWA mg/m3: 0.05
REL-C ppm: 0.02
REL-C mg/m3: 0.2
IDLH mg/m3: 75

4,4'-Diphenylmethane Diisocyanate (MDI)

OSHA:
PEL-C ppm: 0.02
PEL-C mg/m3: 0.2
NIOSH:
REL-TWA ppm: 0.005
REL-TWA mg/m3: 0.05
REL-C ppm: 0.02
REL-C mg/m3: 0.2
IDLH mg/m3: 75

8.2 EXPOSURE CONTROLS

Engineering measures to reduce exposure:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Provide sufficient air exchange and/or exhaust in work rooms. In all workplaces or parts of the plant where high concentrations of isocyanate aerosols and/or vapors may be generated (e.g. during pressure release, mold venting or when cleaning mixing heads with an air blast), appropriately located exhaust ventilation must be provided in order to prevent occupational exposure limits from being exceeded. The air should be drawn away from the personnel handling the product. The efficiency of the ventilation system must be monitored regularly because of the possibility of blockage. Atmospheric concentrations should be minimized and kept as low as reasonably practicable below the occupational exposure limit.

8.3 INDIVIDUAL PROTECTIVE MEASURES

General: Use personal protective equipment as required.

Animal tests and other research indicate that skin contact with isocyanates can play a role in causing isocyanate sensitization and respiratory reaction. Lung damage and respiratory sensitization may be permanent.

All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history or eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted.

Eye protection: Wear safety glasses with side shields (or goggles).

Hand protection: Wear appropriate chemical resistant gloves. Nitrile rubber showed excellent resistance. Butyl rubber, neoprene and PVC are also effective.

Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Airborne isocyanate concentrations greater than the ACGIH TLV-TWA (TLV) or OSHA PEL-C- (PEL) can occur in inadequately ventilated environments when isocyanates 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). The type of respiratory protection available includes (1) an atmosphere-supplying respiratory such as a self-contained breathing apparatus (SCBA) or a supplied air respirator (SAR) in the positive pressure or continuous flow mode, or (2) an air purifying respirator (APR). If an APR is selected then (a) the cartridge must be equipped with an end-of-service life indicator (ESLI) certified by NIOSH, or (b) a change out schedule, based on objective information or data that will ensure that the cartridges are changed out before the end of their service life, must be developed and implemented. The basis for the change out schedule must be described in the written respirator program. Further, if an APR is selected, the airborne diisocyanate concentration must be no greater than 10 times the TLV or PEL. The recommended APR cartridge is an organic vapor/particulate filter combination cartridge (OV/P100).

Skin and body protection:	Wear appropriate chemical resistant clothing. Animal tests and other research indicate that skin contact with isocyanates can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.
Hygiene measures:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.
Thermal hazards:	Wear appropriate thermal protective clothing, when necessary.

Environmental exposure controls: Environmental manager must be informed of all major releases.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Cream-colored liquid with aromatic odor
Color:	Cream
Form:	Aerosol
Odor:	Aromatic
Odor Threshold:	Not applicable
Physical State:	Liquid
pH (at 20°C):	Not applicable
Melting Point/Freezing Point:	Not applicable
Initial Boiling Point and Boiling Range:	Not applicable
Flash Point:	Not applicable
Evaporation Rate:	Not applicable
Flammability (solid, gaseous):	Not Flammable
Lower Flammability/Explosive Limit:	Not applicable
Upper Flammability/Explosive Limit:	Not applicable
Vapor Pressure (mm Hg @38°C):	5716 hPa
Vapor Density:	Not applicable
Density (lb/gal):	10.0 – 10.6 lb/gal (1.2 –1.27 kg/l)
Relative Density/Specific Gravity:	1.2 - 1.27 (Water=1)
Solubility in water/miscibility:	Insoluble - reacts slowly with water to liberate CO2 gas
Partition coefficient: n-octanol/water:	Not applicable
Auto-ignition Temperature:	Not applicable
Decomposition Temperature:	Not applicable
Viscosity (at 20°C) g/L:	Not applicable
Oxidizing Properties:	Not applicable
Explosive Properties:	Not applicable
VOC:	25 g/L (<0.21 lb/gal) ASTM D2369
Solvent content - Water:	Not applicable
Solvent content - Solids:	Not applicable
Other information:	Not applicable
Incompatibilities:	Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols. Moisture sensitive.

SECTION 10: STABILITY AND REACTIVITY

10.1 REACTIVITY The product is stable and non-reactive under normal conditions of use, storage and transport.

10.2 CHEMICAL STABILITY

Chemical stability: Material is stable under normal conditions.

Materials to avoid: Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols. Moisture sensitive.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS

Hazardous reactions: Moisture sensitive. Contact with moisture, other materials that react with isocyanates, or temperatures above 350°F (177°C), may cause polymerizations.

10.4 CONDITIONS TO AVOID Contact with incompatible materials. Temperatures above 350°F (177°C). Heat may cause the cylinders to explode. Avoid heat, sparks, open flames and other ignition sources. Contact with incompatible materials.

10.5 INCOMPATIBLE MATERIALS Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols. Moisture sensitive.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous decomposition products: By fire and high heat: Carbon dioxide (CO2), Carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke, isocyanate, isocyanic acid, other undetermined compounds.

Hazardous polymerization: Moisture sensitive. Contact with moisture, other materials that react with isocyanates, or temperatures above 350°F (177°C), may cause polymerizations.

Other information: Not applicable.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

Acute toxicity: Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May be harmful if inhaled. May cause respiratory irritation. May cause an allergic skin reaction. Dermatitis. Rash. Causes skin irritation. May cause redness and pain. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Likely routes of exposure: Skin contact. Eye contact. Inhalation.

Eye: Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Skin: May cause an allergic skin reaction. Dermatitis. Rash. Causes skin irritation. May cause redness and pain.
Contact with MDI can cause discoloration. 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 isocyanates.

Ingestion: Not an expected route of exposure. Expected to be a low ingestion hazard.

Inhalation: Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May be harmful if inhaled. May cause respiratory irritation.
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.

LD50/LC50 values relevant to this classification:

4,4'-Diphenylmethane Diisocyanate (MDI)

Oral rat LD50 >2,000 mg/kg bw
Oral rat LD50 >7,616 mg/kg bw
Oral rat LD50 >10,000 mg/kg bw
Inhal rat LC50 >300 mg/m3 air 4hr
Inhal rat LC50 369 mg/m3 air 4hr
Inhal rat LC50 >2.24 mg/L air 1hr
Inhal rat LC50 0.49 mg/L air 4hr
Derm rabbit LD50 >9,400 mg/kg bw

Norflurane

Inhal rat LC0 >567,000 ppm air 4 hr, practically non toxic
Inhal dog LC50 80,000 ppm air 1 hr, no effects
Inhal mouse LC50 >270,000 ppm air 10 min, no effects

Calculated overall chemical acute toxicity values for this formulation:

Calculated overall Chemical Acute Toxicity Values		
LC50 (inhalation)	**LD50 (oral)**	**LD50 (dermal)**
> 1.0 and ≤ 5.0 mg/L (dust and	>2000 mg/kg	>2000 mg/kg

11.2 DELAYED, IMMEDIATE, AND CHRONIC EFFECTS OF SHORT- AND LONG-TERM EXPOSURE

Skin corrosion/irritation: Causes skin irritation. May cause redness and pain.
Contact with MDI can cause discoloration. 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 isocyanates.

Serious eye damage/irritation: Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Respiratory sensitization: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin sensitization: May cause an allergic skin reaction.

Symptoms and target organs: Prolonged exposure may cause chronic effects. Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause damage to organs <Respiratory System> through prolonged or repeated exposure <inhalation>. May cause respiratory irritation. May cause allergic skin reaction. Dermatitis. Rash. Causes skin irritation. May cause redness and pain. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Chronic health effects: May cause damage to organs <Respiratory System> through prolonged or repeated exposure <inhalation>.

Carcinogenicity: This preparation does not contain a component that is considered a human carcinogen by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists), OSHA (Occupational Safety and Health Administration) or NTP (National Toxicological Program).
Lung tumors have been observed in laboratory animals exposed to respirable

aerosol droplets of MDI/Polymeric MDI (6 mg/m3) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

Material	OSHA(O)	ACGIH(G)	NTP(N)	IARC(I)
Polymeric Diphenylmethane Diisocyanate (pMDI)	Not listed	Not listed	Not listed	3
4,4'-Diphenylmethane Diisocyanate (MDI)	Not listed	Not listed	Not listed	3

SOURCE AGENCY CARCINOGEN CLASSIFICATIONS:

OSHA (O) =Occupational Safety and Health Administration
Ca/Yes = Expected to be carcinogenic
not listed = Not expected to be carcinogenic

ACGIH (G) =American Conference of Governmental Industrial Hygienists
A1 =Confirmed human carcinogen
A2 =Suspected human carcinogen
A3 =Animal carcinogen
A4 =Not classifiable as a human carcinogen
A5 =Not suspected as a human carcinogen
not listed = Not expected to be carcinogenic

NTP (N) =National Toxicology Program
K =Known to be a carcinogen
R = Reasonably anticipated to be a carcinogen
not listed = Not expected to be carcinogenic

IARC (I) =International Agency for Research on Cancer
1 =Carcinogenic to humans
2A =Probably carcinogenic to humans
2B =Possibly carcinogenic to humans
3 =Not classifiable as to its carcinogenicity to humans
4 =Probably not carcinogenic to humans
not listed = Not expected to be carcinogenic

Mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Reproductive Toxicity: This product is not expected to cause reproductive or developmental effects.

Specific Target Organ Toxicity (STOT):

Single Exposure: May cause respiratory irritation.

Repeated Exposure: May cause damage to organs <Respiratory System> through prolonged or repeated exposure <inhalation>.

Aspiration Toxicity: Based on available data, this product is not expected to cause aspiration toxicity.

Other Information: Not applicable.

SECTION 12: ECOLOGICAL INFORMATION

12.1 ECOTOXICITY

Ecotoxicity: The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Acute aquatic toxicity: The product is not classified as acutely environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Chronic toxicity: The product is not classified as having a chronic environmental hazard. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Environmental effects: The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

12.2 PERSISTENCE AND DEGRADABILITY

Persistence/biodegradability: The product contains substances which are not expected to be readily biodegradable.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available.

12.4 MOBILITY

Mobility: No data available.

Mobility in soil: No data available.

Mobility in non-soil: No data available.

12.5 OTHER ADVERSE EFFECTS

Ozone layer: No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Disposal method: This material must be disposed of in accordance with all local, state, provincial, and federal regulations.

Contaminated packaging: Since emptied containers may retain product residue, follow label warnings even after container is emptied. Dispose of contents and container in accordance with all local, regional, national and international regulations.

EU codes: The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Residual waste: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents and container in accordance with all local, regional, national and international regulations.

Waste codes: The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Other disposal recommendations: During product disposal, wear recommended eye and skin protection. maintain proper ventilation. Empty canisters completely of any remaining material. Add oil absorbent to waste components. Dispose of waste in an approved landfill. Turn empty canister upside down and open valve completely to relieve the canister of pressure. Once pressure is completely evacuated, locate and punch out the button on the shoulder of the canister using a non-ferrous punch. Empty canisters can be sent to a metal recycler or an approved landfill. Do not burn empty canisters. Dispose in accordance with local, federal, and state regulations.

SECTION 14: TRANSPORT INFORMATION

DOT Non-Bulk

UN: UN3500
Proper shipping name: CHEMICAL UNDER PRESSURE, N.O.S. (NORFLURANE)
Hazard class: 2.2 **Packing group:** n/a

DOT Bulk

UN: UN3500
Proper shipping name: CHEMICAL UNDER PRESSURE, N.O.S. (NORFLURANE)
Hazard class: 2.2 **Packing group:** n/a

IMO/IMDG

UN: UN3500
Proper shipping name: CHEMICAL UNDER PRESSURE, N.O.S. (NORFLURANE)
Hazard class: 2.2 **Packing group:** n/a

ICAO/IATA

UN: UN3500
Proper shipping name: CHEMICAL UNDER PRESSURE, N.O.S. (NORFLURANE)
Hazard class: 2.2 **Packing group:** n/a

Reportable quantity: Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating

to the transportation of the material

SECTION 15: REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/ LEGISLATIONS SPECIFIC FOR THE CHEMICAL

US Federal Regulations:

U.S. OSHA (Occupational Safety and Health Administration) Specifically Regulated Substances (29 CFR 1910.1001-1050)

No components of this product are present at concentration greater than or equal to 0.1% and are identified as a carcinogen or potential carcinogen by OSHA.

SARA/CERCLA reporting requirements:

The following components of this product are found at concentrations greater than or equal to 0.1% and are subject to SARA/CERCLA reporting requirements.

Material	SARA 302 (EHSs) TPQ	SARA 304 EHSs RQ	CERCLA RQ	SARA 313 listed	RCRA CODE	CAA 112(r) TQ
Polymeric Diphenylmethane Diisocyanate (pMDI)	Not listed	Not listed	Not listed	313	Not listed	Not listed
4,4'-Diphenylmethane Diisocyanate (MDI)	Not listed	Not listed	5.000	Not listed	Not listed	Not listed

State Right-to-Know Regulations

The following components of this product are found at concentrations greater than or equal to 0.1%, subject to state Right-to-Know reporting requirements; or are found at any concentration and are listed under California Proposition 65.

Material	California Proposition 65	Massachusetts Right-to-Know	Minnesota Employee Right-to-Know	New Jersey Community Environmental Hazard Right-to-Know	New Jersey Right-to-Know Substance	Pennsylvania Right-to-Know	Rhode Island Right-to-Know
Polymeric Diphenylmethane Diisocyanate (pMDI)	Not listed	Listed	Listed	Listed	Listed	Listed	Not listed
4,4'-Diphenylmethane Diisocyanate (MDI)	Not listed	Listed	Listed	Listed	Listed	Listed	Not listed

Global Inventories:

Notification status:	
US - TSCA	All substances are listed
Canada -DSL	All substances are listed
Canada - NDSL	No substances are listed
EU - EINECS	Not all substances are listed
EU - ELINCS	No substances are listed
EU - NLP	No substances are listed
Australia – AICS	All substances are listed
China - EICSC	All substances are listed
Japan - ENCS	All substances are listed
Korea - KECI	All substances are listed
Taiwan - NECI	All substances are listed
New Zealand - NZIoC	All substances are listed
Philippine - PICCS	All substances are listed

EU - REACH Status:

A registration number is not available for substances in this mixture as the substances are exempted from registration or the annual tonnage does not require a registration.

HAZARD CLASSIFICATION	CATEGORY

Acute Toxicity - Inhalation	4
Skin Corrosion/Irritation	2
Eye Damage/Irritation	2
Sensitization - Respiratory	1
Sensitization – Skin	1
Carcinogenicity	2
STOT SE - Specific Toxic Organ Toxicity (Single Exposure)	3
STOT RE - Specific Toxic Organ Toxicity (Repeated Exposure)	2
Gases Under Pressure	-

CANADA – WHMIS (Workplace Hazardous Materials Information System) Classification (GHS):

HAZARD CLASSIFICATION	CATEGORY
Acute Toxicity - Inhalation	4
Skin Corrosion/Irritation	2
Eye Damage/Irritation	2
Sensitization - Respiratory	1
Sensitization - Skin	1
STOT SE - Specific Toxic Organ Toxicity (Single Exposure)	3
STOT RE - Specific Toxic Organ Toxicity (Repeated Exposure)	2
Gases Under Pressure	-

MEXICO (GHS):

HAZARD CLASSIFICATION	CATEGORY
Acute Toxicity - Inhalation	4
Skin Corrosion/Irritation	2
Eye Damage/Irritation	2
Sensitization - Respiratory	1
Sensitization – Skin	1
Carcinogenicity	2
STOT SE - Specific Toxic Organ Toxicity (Single Exposure)	3
STOT RE - Specific Toxic Organ Toxicity (Repeated Exposure)	2
Gases Under Pressure	-

Carcinogen Status: 2

SECTION 16: OTHER INFORMATION

HMIS (Hazardous Materials Identification System) rating:

Health:	**2***
Flammability:	**1**
Physical:	**1**

NFPA 704 (National Fire Protection Association) rating:

Health	**2**
Fire	**1**
Reactivity	**1**

Legend:

DOT	US Department of Transportation
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
ACGIH	American Conference of Governmental Industrial Hygienists
NTP	National Toxicology Program
IARC	International Agency for Research on Cancer
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
CAA	Clean Air Act
SARA	Superfund Amendments and Reauthorization Act
EPCRA	Emergency Planning and Community Right-to-Know Act
WHMIS	Workplace Hazardous Materials Information System
EU	European Union
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
TSCA	US Toxic Substances Control Act (TSCA)
DSL	Canada Domestic Substance List (DSL)
NDSL	Canada Non-Domestic Substance List (NDSL)
EINECS	European Inventory of Existing Commercial Chemical Substances (EINECS)
ELINCS	European List of Notified Chemical Substances (ELINCS)
NLP	European list of No-longer Polymers (NLP)
AICS	Australian Inventory of Chemical Substances (AICS)
EICSC	China Existing Chemical Inventory - IECSC
ENCS	Japanese Existing and New Chemical Substances Inventory(ENCS)
KECI	Korea Existing Chemicals Inventory(KECI)
NECI	Taiwan National Existing Chemical Inventory (NECI)
NZIoC	New Zealand Inventory of Chemicals (NZIoC)
PICCS	Philippine Inventory of Chemicals and Chemical Substances (PICCS)
HMIS	Hazardous Materials Identification System
NFPA	National Fire Protection Association (NFPA)

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End of Safety Data Sheet