



APOC Polyset Commercial Roofing Adhesive (HFO) A-side

ICP Construction Inc.

Version No: 1.1
Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: **03/15/2023**
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S.GHS.USA.EN

SECTION 1 Identification

Product Identifier

| | |
|-------------------------------|---------------------------------------------------------------|
| Product name | APOC Polyset Commercial Roofing Adhesive (HFO) A-side |
| Synonyms | Not Available |
| Proper shipping name | Chemical under pressure, n.o.s. (hydrofluoroolefin, nitrogen) |
| Other means of identification | Not Available |

Recommended use of the chemical and restrictions on use

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|--------------------------|----------------------------------------------------------------------------|
| Relevant identified uses | Polyurethane Foam Adhesive System- Component A. For Professional Use Only. |
|--------------------------|----------------------------------------------------------------------------|

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

| | |
|-------------------------|--------------------------------------------------------|
| Registered company name | ICP Construction Inc. |
| Address | 150 Dascomb Road Andover, MA 01810 United States |
| Telephone | 1-866-667-5119 1-978-623-9987 |
| Fax | Not Available |
| Website | www.icpgroup.com |
| Email | sds@icpgroup.com |

Emergency phone number

| | |
|-----------------------------------|----------------|
| Association / Organisation | ChemTel |
| Emergency telephone numbers | 1-800-255-3924 |
| Other emergency telephone numbers | 1-813-248-0585 |

SECTION 2 Hazard(s) identification

Classification of the substance or mixture



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

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| Classification | Serious Eye Damage/Eye Irritation Category 2A, Sensitisation (Respiratory) Category 1B, Specific Target Organ Toxicity - Repeated Exposure Category 2, Acute Toxicity (Inhalation) Category 4, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, Skin Corrosion/Irritation Category 2, Gases Under Pressure (Compressed Gas), Sensitisation (Skin) Category 1 |
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Label elements

| | |
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| Hazard pictogram(s) | |
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| | |
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| Signal word | Danger |
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Hazard statement(s)

| | |
|------|--------------------------------|
| H319 | Causes serious eye irritation. |
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| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H373 | May cause damage to organs through prolonged or repeated exposure. (Respiratory system) (Inhalation) |
| H332 | Harmful if inhaled. |
| H335 | May cause respiratory irritation. |
| H315 | Causes skin irritation. |
| H280 | Contains gas under pressure; may explode if heated. |
| H317 | May cause an allergic skin reaction. |

Hazard(s) not otherwise classified

Not Applicable

Precautionary statement(s) Prevention

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| P202 | Do not handle until all safety precautions have been read and understood |
| P260 | Do not breathe gas. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P284 | [In case of inadequate ventilation] wear respiratory protection. |
| P251 | Pressurized container: Do not pierce or burn, even after use |
| P280 | Wear protective gloves, protective clothing, eye protection and face protection. |
| P264 | Wash all exposed external body areas thoroughly after handling. |
| P272 | Contaminated work clothing must not be allowed out of the workplace. |

Precautionary statement(s) Response

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| P342+P311 | If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician/first aider. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P312 | Call a POISON CENTER/doctor/physician/first aider/if you feel unwell. |
| P333+P313 | If skin irritation or rash occurs: Get medical advice/attention. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P302+P352 | IF ON SKIN: Wash with plenty of water and soap. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P362+P364 | Take off contaminated clothing and wash it before reuse. |

Precautionary statement(s) Storage

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| P405 | Store locked up. |
| P410+P403 | Protect from sunlight. Store in a well-ventilated place. |

Precautionary statement(s) Disposal

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| P501 | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |
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SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

| CAS No | %[weight] | Name |
|-------------|-----------|------------------------------------------------|
| 101-68-8* | 30-60 | <u>4,4'-diphenylmethane diisocyanate (MDI)</u> |
| 9016-87-9* | 30-60 | <u>polymeric diphenylmethane diisocyanate</u> |
| 13674-84-5* | 10-15 | <u>tris(2-chloroisopropyl)phosphate</u> |
| 29118-24-9 | 5-10 | <u>1,3,3,3-tetrafluoropropene</u> |
| 7727-37-9. | <5 | <u>nitrogen</u> |

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4 First-aid measures

Description of first aid measures

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| Eye Contact | <ul style="list-style-type: none"> ▶ If product comes in contact with eyes remove the patient from gas source or contaminated area. ▶ Take the patient to the nearest eye wash, shower or other source of clean water. ▶ Open the eyelid(s) wide to allow the material to evaporate. ▶ Gently rinse the affected eye(s) with clean, cool water for at least 15 minutes. Have the patient lie or sit down and tilt the head back. Hold the eyelid(s) open and pour water slowly over the eyeball(s) at the inner corners, letting the water run out of the outer corners. ▶ The patient may be in great pain and wish to keep the eyes closed. It is important that the material is rinsed from the eyes to prevent further damage. ▶ Ensure that the patient looks up, and side to side as the eye is rinsed in order to better reach all parts of the eye(s) ▶ Transport to hospital or doctor. |
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| | <ul style="list-style-type: none"> ▶ Even when no pain persists and vision is good, a doctor should examine the eye as delayed damage may occur. ▶ If the patient cannot tolerate light, protect the eyes with a clean, loosely tied bandage. ▶ Ensure verbal communication and physical contact with the patient. <p>DO NOT allow the patient to rub the eyes DO NOT allow the patient to tightly shut the eyes DO NOT introduce oil or ointment into the eye(s) without medical advice DO NOT use hot or tepid water.</p> |
| Skin Contact | <p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> ▶ Immediately flush body and clothes with large amounts of water, using safety shower if available. ▶ Quickly remove all contaminated clothing, including footwear. ▶ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. ▶ Transport to hospital, or doctor. |
| Inhalation | <ul style="list-style-type: none"> ▶ Following exposure to gas, remove the patient from the gas source or contaminated area. ▶ NOTE: Personal Protective Equipment (PPE), including positive pressure self-contained breathing apparatus may be required to assure the safety of the rescuer. ▶ Prostheses such as false teeth, which may block the airway, should be removed, where possible, prior to initiating first aid procedures. ▶ If the patient is not breathing spontaneously, administer rescue breathing. ▶ If the patient does not have a pulse, administer CPR. ▶ If medical oxygen and appropriately trained personnel are available, administer 100% oxygen. ▶ Summon an emergency ambulance. If an ambulance is not available, contact a physician, hospital, or Poison Control Centre for further instruction. ▶ Keep the patient warm, comfortable and at rest while awaiting medical care. ▶ MONITOR THE BREATHING AND PULSE, CONTINUOUSLY. ▶ Administer rescue breathing (preferably with a demand-valve resuscitator, bag-valve mask-device, or pocket mask as trained) or CPR if necessary. |
| Ingestion | Not considered a normal route of entry. |

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

For gas exposures:

BASIC TREATMENT

- ▶ Establish a patent airway with suction where necessary.
- ▶ Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- ▶ Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- ▶ Monitor and treat, where necessary, for pulmonary oedema .
- ▶ Monitor and treat, where necessary, for shock.
- ▶ Anticipate seizures.

ADVANCED TREATMENT

- ▶ Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- ▶ Positive-pressure ventilation using a bag-valve mask might be of use.
- ▶ Monitor and treat, where necessary, for arrhythmias.
- ▶ Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- ▶ Drug therapy should be considered for pulmonary oedema.
- ▶ Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- ▶ Treat seizures with diazepam.
- ▶ Proparacaine hydrochloride should be used to assist eye irrigation.

BRONSTEIN, A.C. and CURRANCE, P.L.

EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994

As in all cases of suspected poisoning, follow the ABCDEs of emergency medicine (airway, breathing, circulation, disability, exposure), then the ABCDEs of toxicology (antidotes, basics, change absorption, change distribution, change elimination).

For poisons (where specific treatment regime is absent):

BASIC TREATMENT

- ▶ Establish a patent airway with suction where necessary.
- ▶ Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- ▶ Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- ▶ Monitor and treat, where necessary, for pulmonary oedema.
- ▶ Monitor and treat, where necessary, for shock.
- ▶ Anticipate seizures.
- ▶ **DO NOT** use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.

ADVANCED TREATMENT

- ▶ Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- ▶ Positive-pressure ventilation using a bag-valve mask might be of use.
- ▶ Monitor and treat, where necessary, for arrhythmias.
- ▶ Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- ▶ Drug therapy should be considered for pulmonary oedema.
- ▶ Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- ▶ Treat seizures with diazepam.
- ▶ Proparacaine hydrochloride should be used to assist eye irrigation.

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Continued...

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SECTION 5 Fire-fighting measures

Extinguishing media

- ▶ Water spray or fog.
- ▶ Foam.
- ▶ Dry chemical powder.

Special hazards arising from the substrate or mixture

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| Fire Incompatibility | None known. |
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Special protective equipment and precautions for fire-fighters

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| Fire Fighting | <p>-----</p> <p>GENERAL</p> <p>-----</p> <ul style="list-style-type: none"> ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear full body protective clothing with breathing apparatus. ▶ Fight fire from a safe distance, with adequate cover. |
| Fire/Explosion Hazard | <ul style="list-style-type: none"> ▶ Containers may explode when heated - Ruptured cylinders may rocket ▶ May burn but does not ignite easily. ▶ Fire exposed cylinders may vent contents through pressure relief devices thereby increasing vapour concentration.. ▶ Fire may produce irritating, poisonous or corrosive gases. <p>Decomposition may produce toxic fumes of:</p> |

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

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| Minor Spills | <ul style="list-style-type: none"> ▶ Avoid breathing vapour and any contact with liquid or gas. Protective equipment including respirator should be used. ▶ DO NOT enter confined spaces where gas may have accumulated. |
| Major Spills | <ul style="list-style-type: none"> ▶ Clear area of all unprotected personnel and move upwind. ▶ Alert Emergency Authority and advise them of the location and nature of hazard. ▶ Wear full body clothing with breathing apparatus. ▶ Remove leaking cylinders to a safe place. ▶ Fit vent pipes. Release pressure under safe, controlled conditions ▶ Burn issuing gas at vent pipes. ▶ DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve. |

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

Precautions for safe handling

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| Safe handling | <ul style="list-style-type: none"> · Consider use in closed pressurised systems, fitted with temperature, pressure and safety relief valves which are vented for safe dispersal. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature · The tubing network design connecting gas cylinders to the delivery system should include appropriate pressure indicators and vacuum or suction lines. · Fully-welded types of pressure gauges, where the bourdon tube sensing element is welded to the gauge body, are recommended. <ul style="list-style-type: none"> ▶ DO NOT transfer gas from one cylinder to another. |
| Other information | <p>Consider storage under inert gas.</p> <ul style="list-style-type: none"> ▶ Cylinders should be stored in a purpose-built compound with good ventilation, preferably in the open. ▶ Such compounds should be sited and built in accordance with statutory requirements. ▶ The storage compound should be kept clear and access restricted to authorised personnel only. |

Conditions for safe storage, including any incompatibilities

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| Suitable container | <ul style="list-style-type: none"> ▶ Cylinder: ▶ Ensure the use of equipment rated for cylinder pressure. ▶ Ensure the use of compatible materials of construction. ▶ Valve protection cap to be in place until cylinder is secured, connected. |
| Storage incompatibility | <ul style="list-style-type: none"> ▶ Compressed gases may contain a large amount of kinetic energy over and above that potentially available from the energy of reaction produced by the gas in chemical reaction with other substances |

SECTION 8 Exposure controls / personal protection

Control parameters

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Occupational Exposure Limits (OEL)

INGREDIENT DATA

| Source | Ingredient | Material name | TWA | STEL | Peak | Notes |
|------------------------------------------------------|-----------------------------------------|--------------------------------------|------------------------|---------------|-----------------------------------------------|---------------|
| US OSHA Permissible Exposure Limits (PELs) Table Z-1 | 4,4'-diphenylmethane diisocyanate (MDI) | Methylene bisphenyl isocyanate (MDI) | Not Available | Not Available | 0.02 ppm / 0.2 mg/m3 | Not Available |
| US NIOSH Recommended Exposure Limits (RELs) | 4,4'-diphenylmethane diisocyanate (MDI) | Methylene bisphenyl isocyanate | 0.005 ppm / 0.05 mg/m3 | Not Available | 0.020 (10-minute) ppm / 0.2 (10-minute) mg/m3 | Not Available |

Emergency Limits

| Ingredient | TEEL-1 | TEEL-2 | TEEL-3 |
|-----------------------------------------|--------------|---------------|---------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | 0.45 mg/m3 | Not Available | Not Available |
| polymeric diphenylmethane diisocyanate | 0.15 mg/m3 | 3.6 mg/m3 | 22 mg/m3 |
| 1,3,3,3-tetrafluoropropene | 1,400 ppm | Not Available | Not Available |
| nitrogen | 7.96E+05 ppm | 8.32E+05 ppm | 8.69E+05 ppm |

| Ingredient | Original IDLH | Revised IDLH |
|-----------------------------------------|---------------|---------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | 75 mg/m3 | Not Available |
| polymeric diphenylmethane diisocyanate | Not Available | Not Available |
| tris(2-chloroisopropyl)phosphate | Not Available | Not Available |
| 1,3,3,3-tetrafluoropropene | Not Available | Not Available |
| nitrogen | Not Available | Not Available |


Occupational Exposure Banding

| Ingredient | Occupational Exposure Band Rating | Occupational Exposure Band Limit |
|----------------------------------------|-----------------------------------|----------------------------------|
| polymeric diphenylmethane diisocyanate | E | ≤ 0.1 ppm |
| tris(2-chloroisopropyl)phosphate | E | ≤ 0.1 ppm |

Notes:

Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.

Exposure controls

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| Appropriate engineering controls | Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. |
| Individual protection measures, such as personal protective equipment |  |
| Eye and face protection | <ul style="list-style-type: none"> ▶ Safety glasses with side shields. ▶ Chemical goggles. ▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. |
| Skin protection | See Hand protection below |
| Hands/feet protection | <p>NOTE:</p> <ul style="list-style-type: none"> ▶ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. ▶ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. ▶ When handling sealed and suitably insulated cylinders wear cloth or leather gloves. |
| Body protection | See Other protection below |
| Other protection | <ul style="list-style-type: none"> ▶ Protective overalls, closely fitted at neck and wrist. ▶ Eye-wash unit. ▶ Ensure availability of lifeline in confined spaces. |

Respiratory protection

Full face respirator with supplied air.

- ▶ Positive pressure, full face, air-supplied breathing apparatus should be used for work in enclosed spaces if a leak is suspected or the primary containment is to be opened (e.g. for a cylinder change)
- ▶ Air-supplied breathing apparatus is required where release of gas from primary containment is either suspected or demonstrated.

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Continued...

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|-----------------------------------------------------|---------------------|------------------------------------------------|---------------------------|
| Appearance | Moisture sensitive. | | |
| Physical state | Compressed Gas | Relative density (Water = 1) | Not Available |
| Odour | Not Available | Partition coefficient n-octanol / water | Not Available |
| Odour threshold | Not Available | Auto-ignition temperature (°C) | Not Available |
| pH (as supplied) | Not Available | Decomposition temperature (°C) | Not Available |
| Melting point / freezing point (°C) | Not Available | Viscosity (cSt) | Not Available |
| Initial boiling point and boiling range (°C) | Not Available | Molecular weight (g/mol) | Not Available |
| Flash point (°C) | Not Available | Taste | Not Available |
| Evaporation rate | Not Available | Explosive properties | Not Available |
| Flammability | Not Available | Oxidising properties | Not Available |
| Upper Explosive Limit (%) | Not Available | Surface Tension (dyn/cm or mN/m) | Not Available |
| Lower Explosive Limit (%) | Not Available | Volatile Component (%vol) | Not Available |
| Vapour pressure (kPa) | Not Available | Gas group | Not Available |
| Solubility in water | Immiscible | pH as a solution (1%) | Not Available |
| Vapour density (Air = 1) | Not Available | VOC g/L | 98 when mixed as intended |

SECTION 10 Stability and reactivity

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|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity | See section 7 |
| Chemical stability | <ul style="list-style-type: none"> ▶ Unstable in the presence of incompatible materials. ▶ Product is considered stable. ▶ Hazardous polymerisation will not occur. |
| Possibility of hazardous reactions | See section 7 |
| Conditions to avoid | See section 7 |
| Incompatible materials | See section 7 |
| Hazardous decomposition products | See section 5 |

SECTION 11 Toxicological information

Information on toxicological effects

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|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inhaled | <p>The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhalation of the vapour is hazardous and may even be fatal</p> <p>The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.</p> <p>Inhalation of toxic gases may cause:</p> <ul style="list-style-type: none"> ▶ Central Nervous System effects including depression, headache, confusion, dizziness, stupor, coma and seizures; ▶ respiratory: acute lung swellings, shortness of breath, wheezing, rapid breathing, other symptoms and respiratory arrest; ▶ heart: collapse, irregular heartbeats and cardiac arrest; ▶ gastrointestinal: irritation, ulcers, nausea and vomiting (may be bloody), and abdominal pain. |
| Ingestion | <p>Accidental ingestion of the material may be damaging to the health of the individual.</p> <p>Not normally a hazard due to physical form of product.</p> <p>Considered an unlikely route of entry in commercial/industrial environments</p> |
| Skin Contact | <p>This material can cause inflammation of the skin on contact in some persons.</p> <p>The material may accentuate any pre-existing dermatitis condition</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.</p> |
| Eye | <p>This material can cause eye irritation and damage in some persons.</p> <p>Not considered to be a risk because of the extreme volatility of the gas.</p> |
| Chronic | <p>Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems.</p> <p>Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems.</p> <p>Inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population.</p> <p>Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.</p> |

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| | <p>This product contains a polymer with a functional group considered to be of high concern. Isothiocyanates may cause hypersensitivity of the skin and airways.</p> <p>The reactivity of an epoxide intermediate may be the reason for the cancer-causing properties of halogenated oxiranes. It is reported that 1,1-dichloroethyne, vinyl chloride, trichloroethylene, tetrachloroethylene and chloroprene all cause cancer.</p> <p>Generally speaking, substances with one halogen substitution show higher potential to cause cancer compared to substances with two. Main route of exposure to the gas in the workplace is by inhalation.</p> <p>Persons with a history of asthma or other respiratory problems or are known to be sensitised, should not be engaged in any work involving the handling of isocyanates.</p> <p>The chemistry of reaction of isocyanates, as evidenced by MDI, in biological milieu is such that in the event of a true exposure of small MDI doses to the mouth, reactions will commence at once with biological macromolecules in the buccal region and will continue along the digestive tract prior to reaching the stomach. Reaction products will be a variety of polyureas and macromolecular conjugates with for example mucus, proteins and cell components.</p> <p>There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.</p> |
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| Polyset Commercial Roofing Adhesive (HFO) A-side | TOXICITY | IRRITATION |
| | Not Available | Not Available |

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|------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | TOXICITY | IRRITATION |
| | Dermal (rabbit) LD50: >6200 mg/kg ^[2] | Dermal Sensitiser * |
| | Inhalation(Rat) LC50: 178 mg/m ³ [2] | Eye: no adverse effect observed (not irritating) ^[1] |
| | Oral (Mouse) LD50: 2200 mg/kg ^[2] | Skin (rabbit): 500 mg /24 hours |
| | Oral (Rat)LD50: 9200 mg/kg ^[2] | Skin: adverse effect observed (irritating) ^[1] |
| | Oral (Rat)LDLo: 9200 mg/kg ^[2] | |

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|-----------------------------------------------|----------------------------------------------------------------|-----------------------------|
| polymeric diphenylmethane diisocyanate | TOXICITY | IRRITATION |
| | Dermal (rabbit) LD50: >9400 mg/kg ^[2] | Eye (rabbit): 100 mg - mild |
| | Inhalation(Rat) LC50: 490 mg/m ³ /4h ^[2] | |
| | Oral (Rat) LD50: 43000 mg/kg ^[2] | |

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|-----------------------------------------|----------------------------------------------------|-------------------------------|
| tris(2-chloroisopropyl)phosphate | TOXICITY | IRRITATION |
| | Dermal (rabbit) LD50: >5000 mg/kg ^[2] | Eye (rabbit): non-irritating* |
| | Inhalation(Rat) LC50: >4.6 mg/kl/4H ^[2] | Skin (rabbit): mild (24 h): |
| | Intravenous (Mouse) LD50: 56 mg/kg ^[2] | |
| | Oral (Rat) LD50: 1500 mg/kg ^[2] | |

| | | |
|-----------------------------------|------------------------------------------------------|-------------------|
| 1,3,3,3-tetrafluoropropene | TOXICITY | IRRITATION |
| | Inhalation(Rat) LC50: >1157.752 ppm4h ^[2] | Not Available |

| | | |
|-----------------|-----------------|-------------------|
| nitrogen | TOXICITY | IRRITATION |
| | Not Available | Not Available |

Legend: 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

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| 4,4'-diphenylmethane diisocyanate (MDI) | Inhalation (human) TCLo: 0.13 ppm/30 mins Eye (rabbit): 0.10 mg moderate |
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|-----------------------------------------------|---------|
| polymeric diphenylmethane diisocyanate | product |
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| tris(2-chloroisopropyl)phosphate | <p>Non-chlorinated triphosphates have varying chemical, physical, toxicological and environmental properties. Blooming has been identified as a source of potential exposure (human and environmental) to triphosphate plasticisers / flame retardants. Blooming is the movement of an ingredient in rubber or plastic to the outer surface after curing.</p> <p>For tris(2-chloro-1-methylethyl)phosphate (TCPP)</p> <p>The flame retardant product supplied in the EU, marketed as TCPP, is actually a reaction mixture containing four isomers. The individual isomers in this reaction mixture are not separated or marketed. The individual components are never produced as such.</p> <p>Alkyl esters of phosphoric acid exhibit a low to moderate acute toxicity and metabolised. From studies done on mice, they are not likely to cause gene damage or affect reproduction. However, 2-ethylhexanoic acid produced an effect on newborn rats at high doses to the pregnant female.</p> |
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|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1,3,3,3-TETRAFLUOROPROPENE | <p>Inhalation (rat) NOEL (28 days): >1.5 mg/l * * Vendor HFO-1234ze is not likely to accumulate in the bodies of humans or animals HFO-1234ze is practically non-toxic. Short-term exposures at levels higher than 10% have not induced cardiac sensitization to adrenalin nor induced serious toxic effects. Rats and rabbits did not exhibit any serious toxic, developmental or reproductive effects even with exposures to high levels of HFO-1234ze. Based on a series of mutagenicity and genomics studies, the cancer risk for HFO-1234ze is low, no cardiac sensitisation was observed in dogs with exposures up to 120,000 ppm; repeated dose toxicity in rats (13-wk) found mild effects on the heart (NOEL 5,000ppm); in vitro genotoxicity findings include negative Ames Test and negative human lymphocyte chromosome aberration test; in vivo genotoxicity findings in the mouse micronucleus test were negative (inhalation, mammalian bone-marrow cytogenetic test with chromosomal analysis).</p> <p>Inhalation of perfluoroalkenes can cause lung injury, kidney damage, brain changes and death. Repeated exposures may alter blood pressure and the production of blood cells. The potential for causing cancer is the subject of speculation.</p> |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| | |
|-----------------|--------------------------------------------------------------------------|
| NITROGEN | No significant acute toxicological data identified in literature search. |
|-----------------|--------------------------------------------------------------------------|

Polyset Commercial Roofing Adhesive (HFO) A-side

| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Polyset Commercial Roofing Adhesive (HFO) A-side & 4,4'-diphenylmethane diisocyanate (MDI) & polymeric diphenylmethane diisocyanate | <p>Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant.</p> <p>Allergic reactions involving the respiratory tract are usually due to interactions between IgE antibodies and allergens and occur rapidly. Allergic potential of the allergen and period of exposure often determine the severity of symptoms. Some people may be genetically more prone than others, and exposure to other irritants may aggravate symptoms.</p> <p>Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema.</p> <p>Exogenous allergic alveolitis is induced essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure.</p> <p>The following information refers to contact allergens as a group and may not be specific to this product.</p> <p>Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type.</p> |
| Polyset Commercial Roofing Adhesive (HFO) A-side & 1,3,3,3-TETRAFLUOROPROPENE | <p>Disinfection byproducts (DBPs) are formed when disinfectants such as chlorine, chloramines and ozone react with organic and inorganic matter in water. Animal studies have shown that some DBPs cause cancer. To date, several hundred DBPs have been identified.</p> <p>Numerous haloalkanes and haloalkenes have been tested for cancer-causing and mutation-causing activities.</p> |
| 4,4'-diphenylmethane diisocyanate (MDI) & polymeric diphenylmethane diisocyanate | <p>Isocyanate vapours are irritating to the airways and can cause their inflammation, with wheezing, gasping, severe distress, even loss of consciousness and fluid in the lungs. Nervous system symptoms that may occur include headache, sleep disturbance, euphoria, inco-ordination, anxiety, depression and paranoia.</p> <p>The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.</p> <p>Aromatic and aliphatic diisocyanates may cause airway toxicity and skin sensitization. Monomers and prepolymers exhibit similar respiratory effect. Of the several members of diisocyanates tested on experimental animals by inhalation and oral exposure, some caused cancer while others produced a harmless outcome.</p> <p>The substance is classified by IARC as Group 3: NOT classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.</p> |

| | | | |
|------------------------------------------|---|---------------------------------|---|
| Acute Toxicity | ✓ | Carcinogenicity | ✗ |
| Skin Irritation/Corrosion | ✓ | Reproductivity | ✗ |
| Serious Eye Damage/Irritation | ✓ | STOT - Single Exposure | ✓ |
| Respiratory or Skin sensitisation | ✓ | STOT - Repeated Exposure | ✓ |
| Mutagenicity | ✗ | Aspiration Hazard | ✗ |

Legend: ✗ – Data either not available or does not fill the criteria for classification
✓ – Data available to make classification

SECTION 12 Ecological information

Toxicity

| Polyset Commercial Roofing Adhesive (HFO) A-side | Endpoint | Test Duration (hr) | Species | Value | Source |
|--------------------------------------------------|---------------|--------------------|---------------|---------------|---------------|
| | Not Available | Not Available | Not Available | Not Available | Not Available |

| 4,4'-diphenylmethane diisocyanate (MDI) | Endpoint | Test Duration (hr) | Species | Value | Source |
|-----------------------------------------|-----------|--------------------|-----------|------------------|---------------|
| | LC50 | 96h | Fish | 95.24-134.37mg/l | Not Available |
| | BCF | 672h | Fish | 61-150 | 7 |
| | EC50 | 48h | Crustacea | >100mg/l | 2 |
| | NOEC(ECx) | 504h | Crustacea | >=10mg/l | 2 |

| polymeric diphenylmethane diisocyanate | Endpoint | Test Duration (hr) | Species | Value | Source |
|----------------------------------------|---------------|--------------------|---------------|---------------|---------------|
| | Not Available | Not Available | Not Available | Not Available | Not Available |

| tris(2-chloroisopropyl)phosphate | Endpoint | Test Duration (hr) | Species | Value | Source |
|----------------------------------|-----------|--------------------|-------------------------------|-----------|---------------|
| | EC50 | 48h | Crustacea | 65335mg/l | 1 |
| | EC50 | 96h | Algae or other aquatic plants | 4mg/l | 1 |
| | EC50(ECx) | 96h | Algae or other aquatic plants | 4mg/l | 1 |
| | ErC50 | 72h | Algae or other aquatic plants | 4mg/l | 1 |
| | BCF | 1008h | Fish | 0.8-2.8 | 7 |
| | LC50 | 96h | Fish | 56.2mg/l | Not Available |
| | EC50 | 72h | Algae or other aquatic plants | 82mg/l | Not Available |

| 1,3,3,3-tetrafluoropropene | Endpoint | Test Duration (hr) | Species | Value | Source |
|----------------------------|----------|--------------------|-------------------------------|----------|--------|
| | LC50 | 96h | Fish | >117mg/l | 2 |
| | EC50 | 72h | Algae or other aquatic plants | >170mg/l | 2 |
| | EC50 | 48h | Crustacea | >160mg/l | 2 |
| EC50(ECx) | 48h | Crustacea | >160mg/l | 2 | |

Continued...

Polyset Commercial Roofing Adhesive (HFO) A-side

| | | | | | |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------|---------------|---------------|
| | EC50(ECx) | 72h | Algae or other aquatic plants | >10mg/l | 2 |
| | EC50 | 72h | Algae or other aquatic plants | >10mg/l | 2 |
| nitrogen | Endpoint | Test Duration (hr) | Species | Value | Source |
| | Not Available | Not Available | Not Available | Not Available | Not Available |
| Legend: | <i>Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data</i> | | | | |

DO NOT discharge into sewer or waterways.

Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|-----------------------------------------|--------------------------|-----------------------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | LOW (Half-life = 1 days) | LOW (Half-life = 0.24 days) |
| tris(2-chloroisopropyl)phosphate | HIGH | HIGH |

Bioaccumulative potential

| Ingredient | Bioaccumulation |
|-----------------------------------------|-----------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | LOW (BCF = 330) |
| tris(2-chloroisopropyl)phosphate | LOW (BCF = 4.6) |

Mobility in soil

| Ingredient | Mobility |
|-----------------------------------------|--------------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | LOW (KOC = 376200) |
| tris(2-chloroisopropyl)phosphate | LOW (KOC = 1278) |


SECTION 13 Disposal considerations

Waste treatment methods

| | |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product / Packaging disposal | <ul style="list-style-type: none"> ▶ Evaporate residue at an approved site. ▶ Return empty containers to supplier. If containers are marked non-returnable establish means of disposal with manufacturer prior to purchase. |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

SECTION 14 Transport information

Labels Required

| | |
|-------------------------|-------------------------------------------------------------------------------------|
| |  |
| Marine Pollutant | NO |

Land transport (DOT)

| | | |
|-------------------------------------|---------------------------------------------------------------|----------------|
| UN number or ID number | 3500 | |
| UN proper shipping name | Chemical under pressure, n.o.s. (hydrofluoroolefin, nitrogen) | |
| Transport hazard class(es) | Class | 2.2 |
| | Subsidiary risk | Not Applicable |
| Packing group | Not Applicable | |
| Environmental hazard | Not Applicable | |
| Special precautions for user | Hazard Label | 2.2 |
| | Special provisions | 362, T50, TP40 |

Air transport (ICAO-IATA / DGR)

| | |
|--------------------------------|-----------------------------------------------------------------|
| UN number | 3500 |
| UN proper shipping name | Chemical under pressure, n.o.s. * (hydrofluoroolefin, nitrogen) |

Polyset Commercial Roofing Adhesive (HFO) A-side

| | | |
|-------------------------------------|-----------------------------------------------------------|----------------|
| Transport hazard class(es) | ICAO/IATA Class | 2.2 |
| | ICAO / IATA Subrisk | Not Applicable |
| | ERG Code | 2L |
| Packing group | Not Applicable | |
| Environmental hazard | Not Applicable | |
| Special precautions for user | Special provisions | A187 |
| | Cargo Only Packing Instructions | 218 |
| | Cargo Only Maximum Qty / Pack | 150 kg |
| | Passenger and Cargo Packing Instructions | 218 |
| | Passenger and Cargo Maximum Qty / Pack | 75 kg |
| | Passenger and Cargo Limited Quantity Packing Instructions | Forbidden |
| | Passenger and Cargo Limited Maximum Qty / Pack | Forbidden |

Sea transport (IMDG-Code / GGVSee)

| | | |
|-------------------------------------|---------------------------------------------------------------|----------------|
| UN number | 3500 | |
| UN proper shipping name | CHEMICAL UNDER PRESSURE, N.O.S. (hydrofluoroolefin, nitrogen) | |
| Transport hazard class(es) | IMDG Class | 2.2 |
| | IMDG Subrisk | Not Applicable |
| Packing group | Not Applicable | |
| Environmental hazard | Not Applicable | |
| Special precautions for user | EMS Number | F-C, S-V |
| | Special provisions | 274 362 |
| | Limited Quantities | 0 |

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

| Product name | Group |
|-----------------------------------------|---------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | Not Available |
| polymeric diphenylmethane diisocyanate | Not Available |
| tris(2-chloroisopropyl)phosphate | Not Available |
| 1,3,3,3-tetrafluoropropene | Not Available |
| nitrogen | Not Available |

Transport in bulk in accordance with the IGC Code

| Product name | Ship Type |
|-----------------------------------------|---------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | Not Available |
| polymeric diphenylmethane diisocyanate | Not Available |
| tris(2-chloroisopropyl)phosphate | Not Available |
| 1,3,3,3-tetrafluoropropene | Not Available |
| nitrogen | Not Available |

SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture

4,4'-diphenylmethane diisocyanate (MDI) is found on the following regulatory lists

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
 US - California Hazardous Air Pollutants Identified as Toxic Air Contaminants
 US - Massachusetts - Right To Know Listed Chemicals
 US Clean Air Act - Hazardous Air Pollutants
 US DOE Temporary Emergency Exposure Limits (TEELs)
 US EPA Integrated Risk Information System (IRIS)

US EPCRA Section 313 Chemical List

US NIOSH Recommended Exposure Limits (RELs)

US OSHA Permissible Exposure Limits (PELs) Table Z-1

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

US TSCA Chemical Substance Inventory - Interim List of Active Substances

US TSCA New Chemical Exposure Limits (NCEL)

polymeric diphenylmethane diisocyanate is found on the following regulatory lists

Continued...

Polyset Commercial Roofing Adhesive (HFO) A-side

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
 US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)
 US DOE Temporary Emergency Exposure Limits (TEELs)

US EPCRA Section 313 Chemical List
 US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
 US TSCA Chemical Substance Inventory - Interim List of Active Substances

tris(2-chloroisopropyl)phosphate is found on the following regulatory lists

US - California - Biomonitoring - Priority Chemicals
 US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

US TSCA Chemical Substance Inventory - Interim List of Active Substances

1,3,3,3-tetrafluoropropene is found on the following regulatory lists

US AIHA Workplace Environmental Exposure Levels (WEELs)
 US DOE Temporary Emergency Exposure Limits (TEELs)
 US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

US Toxicology Excellence for Risk Assessment (TERA) Workplace Environmental Exposure Levels (WEEL)
 US TSCA Chemical Substance Inventory - Interim List of Active Substances

nitrogen is found on the following regulatory lists

US - Massachusetts - Right To Know Listed Chemicals
 US DOE Temporary Emergency Exposure Limits (TEELs)

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
 US TSCA Chemical Substance Inventory - Interim List of Active Substances

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 hazard categories

| | |
|--------------------------------------------------------------|-----|
| Flammable (Gases, Aerosols, Liquids, or Solids) | No |
| Gas under pressure | Yes |
| Explosive | No |
| Self-heating | No |
| Pyrophoric (Liquid or Solid) | No |
| Pyrophoric Gas | No |
| Corrosive to metal | No |
| Oxidizer (Liquid, Solid or Gas) | No |
| Organic Peroxide | No |
| Self-reactive | No |
| In contact with water emits flammable gas | No |
| Combustible Dust | No |
| Carcinogenicity | No |
| Acute toxicity (any route of exposure) | Yes |
| Reproductive toxicity | No |
| Skin Corrosion or Irritation | Yes |
| Respiratory or Skin Sensitization | Yes |
| Serious eye damage or eye irritation | Yes |
| Specific target organ toxicity (single or repeated exposure) | Yes |
| Aspiration Hazard | No |
| Germ cell mutagenicity | No |
| Simple Asphyxiant | No |
| Hazards Not Otherwise Classified | No |

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

| Name | Reportable Quantity in Pounds (lb) | Reportable Quantity in kg |
|-----------------------------------------|------------------------------------|---------------------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | 5000 | 2270 |

State Regulations

US. California Proposition 65

None listed

National Inventory Status

| National Inventory | Status |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Australia - AIIC / Australia Non-Industrial Use | Yes |
| Canada - DSL | Yes |
| Canada - NDSL | No (4,4'-diphenylmethane diisocyanate (MDI); polymeric diphenylmethane diisocyanate; tris(2-chloroisopropyl)phosphate; nitrogen) |
| China - IECSC | Yes |
| Europe - EINEC / ELINCS / NLP | No (polymeric diphenylmethane diisocyanate; 1,3,3,3-tetrafluoropropene) |
| Japan - ENCS | No (nitrogen) |
| Korea - KECI | Yes |
| New Zealand - NZIoC | No (1,3,3,3-tetrafluoropropene) |

Continued...

Polyset Commercial Roofing Adhesive (HFO) A-side

| National Inventory | Status |
|---------------------|---------------------------------|
| Philippines - PICCS | No (1,3,3,3-tetrafluoropropene) |
| USA - TSCA | Yes |
| Taiwan - TCSI | Yes |
| Mexico - INSQ | No (1,3,3,3-tetrafluoropropene) |
| Vietnam - NCI | Yes |
| Russia - FBEPH | No (1,3,3,3-tetrafluoropropene) |

Legend:
Yes = All CAS declared ingredients are on the inventory
No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

SECTION 16 Other information

| | |
|---------------|------------|
| Revision Date | 03/15/2023 |
| Initial Date | 03/16/2023 |

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios.

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