Sealed Air

SAFETY DATA SHEET

INSTAPAK® SIMPLY™ COMPONENT "A"

SECTION 1: Identification of the substance/mixture and of the company/ undertaking

1.1 Product identifier

Product name : **INSTAPAK® SIMPLY™ COMPONENT "A"**

EC number : 618-498-9

CAS number : 9016-87-9

Product code : Not available.

Product description : Polymethylene Polyphenylisocyanate (PMDI) for use in Instapak® Simple™ foam dispensing equipment

Product type : Liquid.

Other means of identification : Not available.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product use : Polymethylene Polyphenylisocyanate (PMDI) for use in Instapak® Simple™ foam dispensing equipment

Area of application : Industrial applications.

Uses advised against
None identified.

1.3 Details of the supplier of the safety data sheet

Sealed Air B.V.
Lindenhoutseweg 45
6545 AH Nijmegen,
Nederland
Tel.: +31 (0)24 3710111

To contact Sealed Air with your Environmental, Health and Safety questions please either:

e-mail address of person responsible for this SDS : EHSinstapak@sealedair.com

National contact

Sealed Air Limited,
Telford Way, Kettering, Northants NN16 8UN England,
Telephone: 01536 315700
Fax: 01536 410576

1.4 Emergency telephone number

National advisory body/Poison Centre

Telephone number : Call 111 if you urgently need medical help or advice but it's not a life-threatening situation (NHS 111 service).
In Cornwall, the Scilly Isles, Luton and Bedfordshire areas call 0845 4647 (NHS Direct).
For immediate, life-threatening emergencies, call 999 (Emergency and urgent care services).

Supplier

Telephone number : Chemtrec: +44 870 8200418 and +44 203 8073798 (24/7)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : UVCB

Classification according to UK CLP/GHS

Acute Tox. 4, H332
Skin Irrit. 2, H315
Eye Irrit. 2, H319
Resp. Sens. 1, H334
Skin Sens. 1, H317
Carc. 2, H351 (inhalation)
STOT SE 3, H335
STOT RE 2, H373 (respiratory tract) (inhalation)

The product is classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
H332 - Harmful if inhaled.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 - May cause respiratory irritation.
H351 - Suspected of causing cancer. (inhalation)
H373 - May cause damage to organs through prolonged or repeated exposure. (respiratory tract) (inhalation)

Precautionary statements

Prevention : P280 - Wear protective gloves: ≥ 8 hours (breakthrough time): neoprene rubber: thickness ≥ 0.5 mm / nitrile rubber: thickness ≥ 0.35 mm / butyl rubber: thickness ≥ 0.5 mm / Viton®: thickness ≥ 0.4 mm. Wear protective clothing. Wear eye or face protection.
P260 - Do not breathe vapour.

Response : P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor.

Storage : P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Contains isocyanates. May produce an allergic reaction.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : As from August 24 2023 adequate training is required before industrial or professional use.

Special packaging requirements

SECTION 2: Hazards identification

Containers to be fitted with child-resistant fastenings : Not applicable.

Tactile warning of danger : Not applicable.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII :

PBT	P	B	T	vPvB	vP	vB
N/A	N/A	N/A	Yes	N/A	N/A	N/A

Other hazards which do not result in classification : Persons with a history of asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used.

SECTION 3: Composition/information on ingredients

3.1 Substances : UVCB

Product/ingredient name	Identifiers	%	Classification	Type
Isocyanic acid, polymethylenepolyphenylene ester	EC: 618-498-9 CAS: 9016-87-9	100	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 (inhalation) STOT SE 3, H335 STOT RE 2, H373 (respiratory tract) (inhalation)	[*]
4,4'-methylenediphenyl diisocyanate	REACH #: 01-2119457014-47 EC: 202-966-0 CAS: 101-68-8 Index: 615-005-00-9	25 - 50	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373 (respiratory tract) (inhalation)	[1]
o-(p-isocyanatobenzyl)phenyl isocyanate	REACH #: 01-2119480143-45 EC: 227-534-9 CAS: 5873-54-1 Index: 615-005-00-9	1 - 5	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373 (inhalation)	[1]
2,2'-methylenediphenyl diisocyanate	REACH #: 01-2119927323-43 EC: 219-799-4 CAS: 2536-05-2	0.1 - 1	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373 (inhalation)	[1]

SECTION 3: Composition/information on ingredients

			See Section 16 for the full text of the H statements declared above.	

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type

[*] Substance
[1] Constituent
[2] Additional disclosure due to company policy

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Immediately flush eyes with plenty of tempered water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
wheezing and breathing difficulties
asthma

SECTION 4: First aid measures

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : In case of fire, use water spray (fog), foam, dry chemical or CO_2.

Unsuitable extinguishing media : Do not allow water to enter container because a violent reaction may occur. Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
hydrogen cyanide

5.3 Advice for firefighters

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also Section 8 for additional information on hygiene measures.

6.2 Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

SECTION 6: Accidental release measures

Small spill : Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Do not breathe vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store between the following temperatures: 10 to 40°C (50 to 104°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

Recommendations : Not available.

Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

SECTION 8: Exposure controls/personal protection

Product/ingredient name	Exposure limit values
Isocyanic acid, polymethylenepolyphenylene ester	**EH40/2005 WELs (United Kingdom (UK), 1/2020). [isocyanates, all, except methyl isocyanate] Inhalation sensitiser.** STEL: 0.07 mg/m³, (as -NCO) 15 minutes. TWA: 0.02 mg/m³, (as -NCO) 8 hours.
4,4'-methylenediphenyl diisocyanate	**EH40/2005 WELs (United Kingdom (UK), 1/2020). [isocyanates, all, except methyl isocyanate] Inhalation sensitiser.** STEL: 0.07 mg/m³, (as -NCO) 15 minutes. TWA: 0.02 mg/m³, (as -NCO) 8 hours.
o-(p-isocyanatobenzyl)phenyl isocyanate	**EH40/2005 WELs (United Kingdom (UK), 1/2020). [isocyanates, all, except methyl isocyanate] Inhalation sensitiser.** STEL: 0.07 mg/m³, (as -NCO) 15 minutes. TWA: 0.02 mg/m³, (as -NCO) 8 hours.
2,2'-methylenediphenyl diisocyanate	**EH40/2005 WELs (United Kingdom (UK), 1/2020). [isocyanates, all, except methyl isocyanate] Inhalation sensitiser.** STEL: 0.07 mg/m³, (as -NCO) 15 minutes. TWA: 0.02 mg/m³, (as -NCO) 8 hours.

Biological exposure indices

None known.

Recommended monitoring procedures : Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
4,4'-methylenediphenyl diisocyanate	DNEL	Long term Inhalation	0.05 mg/m³	Workers	Local
	DNEL	Short term Inhalation	0.1 mg/m³	Workers	Local
o-(p-isocyanatobenzyl)phenyl isocyanate	DNEL	Long term Inhalation	0.05 mg/m³	Workers	Local
	DNEL	Short term Inhalation	0.1 mg/m³	Workers	Local
2,2'-methylenediphenyl diisocyanate	DNEL	Long term Inhalation	0.05 mg/m³	Workers	Local
	DNEL	Short term Inhalation	0.1 mg/m³	Workers	Local

PNECs

Product/ingredient name	Compartment Detail	Value	Method Detail
4,4'-methylenediphenyl diisocyanate	Fresh water	1 mg/l	-
	Marine water	0.1 mg/l	-
	Sewage Treatment Plant	1 mg/l	-
	Soil	1 mg/kg dwt	-
o-(p-isocyanatobenzyl)phenyl isocyanate	Fresh water	1 mg/l	-
	Marine water	0.1 mg/l	-
	Sewage Treatment Plant	1 mg/l	-
	Soil	1 mg/kg dwt	-

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

SECTION 8: Exposure controls/personal protection

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Recommended (EN 374): butyl rubber, neoprene, nitrile rubber.
Short term exposure: EN 374 ≥ Class 3 (breakthrough time ≥ 1 hour(s))
Long term exposure: EN 374 ≥ Class 5 (breakthrough time) ≥ 4 hours)
Recommended:
neoprene rubber: thickness ≥ 0.5 mm, breakthrough time ≥ 8 hours
nitrile rubber: thickness ≥ 0.35 mm, breakthrough time ≥ 8 hours
butyl rubber: thickness ≥ 0.5 mm, breakthrough time ≥ 8 hours
Viton®: thickness ≥ 0.4 mm, breakthrough time ≥ 8 hours

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid.

Colour : Brown. [Dark]

Odour : Earthy (Odour), Musty.

Odour threshold : Not available.

Melting point/freezing point : Not available.

Initial boiling point and boiling range : >300°C [DIN 53171]

Flammability (solid, gas) : Not available.

Lower and upper explosion limit : Not available.

SECTION 9: Physical and chemical properties

Flash point : Closed cup: 226°C [ISO 2719]

Auto-ignition temperature : Not applicable.

Decomposition temperature : Not available.

pH : Not applicable.

Viscosity : Dynamic: ≥200 mPa·s [DIN 53019]

Solubility(ies) :

Media	Result
water	Not soluble

Miscible with water : No.

Partition coefficient: n-octanol/water : Not applicable.

Vapour pressure : MDI < 0.00001 hPa [20°C]; <0.0005 hPa [50°C]

Evaporation rate : Not available.

Relative density : Not available.

Density : 1.238 g/cm³ [20°C] [DIN 51757]

Vapour density : Not available.

Explosive properties : Not available.

Oxidising properties : Not available.

Particle characteristics

Median particle size : Not applicable.

9.2 Other information

Pour point : <0°C [ISO 3016]

Physical/chemical properties comments : No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : Stable under normal conditions. Polymerises at about 200°C with evolution of carbon dioxide.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur. Uncontrolled exothermic reactions occur with amines and alcohols. The product reacts slowly with water, resulting in the production of carbon dioxide. In closed containers, pressure build-up could result in distortion, expansion and, in extreme cases, bursting of the container.
Under normal conditions of storage and use, hazardous polymerisation will not occur.

10.4 Conditions to avoid : Avoid high temperature and moisture.

10.5 Incompatible materials : Reactive or incompatible with the following materials:
oxidising materials, acids, alkalis, moisture, amines and alcohols.

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Isocyanic acid, polymethylenepolyphenylene ester	LC50 Inhalation Dusts and mists	Rat	1.5 mg/l Estimated.	4 hours
	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.31 mg/l	4 hours
	LD50 Dermal	Rabbit - Male, Female	>9400 mg/kg	-
	LD50 Oral	Rat - Male, Female	>2000 mg/kg	-

Conclusion/Summary : Substance: Harmful if inhaled.

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
Isocyanic acid, polymethylenepolyphenylene ester	N/A	N/A	N/A	N/A	1.5

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Isocyanic acid, polymethylenepolyphenylene ester	Eyes - Negative	Rabbit	-	similar material	-
	Skin - Mild irritant	Rabbit	-	-	-

Conclusion/Summary

Skin : Substance: Irritating to skin.

Eyes : Substance: Irritating to eyes.

Respiratory : Substance: Irritating to respiratory system.

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
Isocyanic acid, polymethylenepolyphenylene ester	Respiratory	Rat	Sensitising
	skin	Guinea pig	Not sensitizing
	skin	Mouse	Sensitising

Conclusion/Summary

Skin : Substance: Sensitiser to skin

Respiratory : Substance: Sensitiser to lungs

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Isocyanic acid, polymethylenepolyphenylene ester	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test (similar material)	Experiment: In vivo Subject: Mammalian-Animal	Negative

SECTION 11: Toxicological information

Conclusion/Summary : Substance: No known significant effects or critical hazards.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Isocyanic acid, polymethylenepolyphenylene ester	Positive - Inhalation - TC	Rat - Male, Female	6 mg/m³	2 years; 6 hours per day ; 5 days per week

Conclusion/Summary : Substance: Suspected of causing cancer if inhaled.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
Isocyanic acid, polymethylenepolyphenylene ester	Positive	-	Positive	Rat - Female	Inhalation: 4 mg/m³ NOAEL	20 days; 6 hours per day

Conclusion/Summary : Substance: No known significant effects or critical hazards.

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Isocyanic acid, polymethylenepolyphenylene ester	Negative - Inhalation	Rat - Female	12 mg/m³ NOAEL (similar material)	20 days; 6 hours per day

Conclusion/Summary : Substance: No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Isocyanic acid, polymethylenepolyphenylene ester	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Isocyanic acid, polymethylenepolyphenylene ester	Category 2	inhalation	respiratory tract

Aspiration hazard

Not available.

Information on likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : This product is a respiratory irritant and potential respiratory sensitiser: repeated inhalation of vapour or aerosol at levels above the occupational exposure limit could cause respiratory sensitisation. Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitised persons.

Skin contact : Causes skin irritation. May cause an allergic skin reaction. Animal studies have shown that respiratory sensitisation can be induced by skin contact with known respiratory sensitisers including diisocyanates. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

SECTION 11: Toxicological information

Ingestion : Low oral toxicity. Ingestion may cause irritation of the gastrointestinal tract.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
wheezing and breathing difficulties
asthma

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No specific data.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Isocyanic acid, polymethylenepolyphenylene ester	Sub-acute LOAEL Inhalation Dusts and mists	Rat - Male, Female	1 mg/m³ (similar material)	2 years; 6 hours per day ; 5 days per week
	Sub-acute NOAEL Inhalation Dusts and mists	Rat - Male, Female	0.2 mg/m³ (similar material)	2 years; 6 hours per day ; 5 days per week

Conclusion/Summary : Substance: No known significant effects or critical hazards.

General : May cause damage to organs through prolonged or repeated exposure if inhaled. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in chronic pulmonary irritation at high concentrations. Only at the top level (6 mg/m3), there was a significant incidence of a benign tumour of the lung (adenoma) and one malignant tumour (adenocarcinoma). There were no lung tumours at 1 mg/m3 and no effects at 0.2 mg/m3. Overall, the tumour incidence, both benign and malignant, and the number of animals with the tumours were not different from controls. The increased incidence of lung tumours is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumour formation will occur.

Mutagenicity : No known significant effects or critical hazards.

SECTION 11: Toxicological information

Reproductive toxicity : No birth defects were seen in two independant animal (rat) studies. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. Fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal, respirable concentrations, which are well in excess of defined occupational exposure limits.

Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Isocyanic acid, polymethylenepolyphenylene ester	Acute EC50 >1640 mg/l	Algae - scenedesmus subspicatus	72 hours
	Acute EC50 >1000 mg/l	Daphnia - Daphnia magna	24 hours
	Acute EC50 >100 mg/l	Micro-organism - Activated sludge	3 hours
	Acute LC50 >1000 mg/l	Fish - Danio rerio	96 hours
	Chronic NOEC >10 mg/l	Daphnia - Daphnia magna	21 days

Conclusion/Summary : Substance: Not classified as dangerous

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
Isocyanic acid, polymethylenepolyphenylene ester	OECD 302C Inherent Biodegradability: Modified MITI Test (II)	0 % - Not readily - 28 days	-	Activated sludge

Conclusion/Summary : Substance: Not readily biodegradable.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Isocyanic acid, polymethylenepolyphenylene ester	Fresh water 0.833 days, 25°C (similar material)	50%; 0.92 day(s)	Not readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Isocyanic acid, polymethylenepolyphenylene ester	-	92	Low

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

SECTION 12: Ecological information

Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
Isocyanic acid, polymethylenepolyphenylene ester	N/A	N/A	N/A	Yes	N/A	N/A	N/A

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Yes.

Waste catalogue

Waste code	Waste designation
08 05 01* 15 01 10*	waste isocyanates packaging containing residues of or contaminated by hazardous substances

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	Not regulated.	9004	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	DIPHENYLMETHANE-4,4'-DIISOCYANATE	-	-
14.3 Transport hazard class(es)	-	9	-	-
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.

Additional information

ADN : The product is only regulated as a dangerous good when transported in tank vessels.

SECTION 14: Transport information

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to IMO instruments

Proper shipping name : Diphenylmethane diisocyanate

Remarks : **Liquid bulk cargoes:**
Ship type: 3
Pollution category: Y

SECTION 15: Regulatory information

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

UK (GB)/REACH

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Ozone depleting substances

Not listed.

Prior Informed Consent (PIC)

Not listed.

Persistent Organic Pollutants

Not listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

No listed substance

Labelling : As from August 24 2023 adequate training is required before industrial or professional use.

Seveso Directive

This product is not controlled under the Seveso Directive.

EU regulations

Industrial emissions (integrated pollution prevention and control) - Air : Listed

Industrial emissions (integrated pollution prevention and control) - Water : Listed

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

SECTION 15: Regulatory information

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

15.2 Chemical safety assessment : Not applicable.

SECTION 16: Other information

Other special considerations :

Indicates information that has changed from previously issued version.

Abbreviations and acronyms :
ATE = Acute Toxicity Estimate
GB CLP = UK CLP (EC No 1272/2008) on the Classification, Labelling and Packaging of Substances and Mixtures as amended by (EU Exit) Regulations 2019 No. 720 and amendments
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EUH statement = GB CLP-specific Hazard statement
N/A = Not available
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number
SGG = Segregation Group
vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification

Classification	Justification
Acute Tox. 4, H332	On basis of test data
Skin Irrit. 2, H315	Expert judgment
Eye Irrit. 2, H319	Expert judgment
Resp. Sens. 1, H334	On basis of test data
Skin Sens. 1, H317	On basis of test data
Carc. 2, H351 (inhalation)	On basis of test data
STOT SE 3, H335	On basis of test data
STOT RE 2, H373 (respiratory tract) (inhalation)	On basis of test data

Full text of abbreviated H statements

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.

Full text of classifications

SECTION 16: Other information

Acute Tox. 4	ACUTE TOXICITY - Category 4
Carc. 2	CARCINOGENICITY - Category 2
Eye Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Resp. Sens. 1	RESPIRATORY SENSITISATION - Category 1
Skin Irrit. 2	SKIN CORROSION/IRRITATION - Category 2
Skin Sens. 1	SKIN SENSITISATION - Category 1
STOT RE 2	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2
STOT SE 3	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE - Category 3

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