PUR-Guard™ Part B

HD-SL, HD-SLE, HD-T, HD-TC, & HD-CB

SAFETY DATA SHEET

OSHA HCS (29 CFR 1910.1200)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Chemical Name	Mixture
Product Name / Trade Name	PUR-Guard™ Part B; HD-SL, HD-SLE, HD-T, HD-TC, & HD-CB
CAS No.	Mixture

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

Identified Use(s)	Industrial Polyurethane Flooring Resin
Uses Advised Against	None

Details of the supplier of the safety data sheet

Company Identification	Res-Tek, Inc. 110 Riverside Drive Cartersville, Georgia 30120 United States of America
Telephone	1-888-737-8351 / 1-770-427-4034
Emergency telephone number	CHEMTREC 24 hr. 1-800-424-9300 / 1 (703) 527-3887 (Collect calls accepted)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture

OSHA HCS (29 CFR 1910.1200) — Acute Tox. 4; Skin Irrit. 2; Eye Irrit. 2B; Skin Sens. 1; Resp. Sens. 1; STOT SE 3 (Resp. System)

Label elements

Hazard Symbol

Signal Word(s) — **DANGER**

Hazard Statement(s)

Causes skin and eye irritation.
May cause an allergic skin reaction.
Harmful if inhaled.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation.

Precautionary Statement(s)

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.
In case of inadequate ventilation wear respiratory protection.

Other hazards — None

Additional Information — None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Composition/information on ingredients	%W/W	CAS No.	Hazard Statement(s)
4,4'-methylenediphenyl diisocyanate	30 - 60	101-68-8	Acute Tox. 4; H332 Eye Irrit. 2B; H320 Skin Irrit. 2; H315 Resp. Sens. 1; H334 Skin Sens. 1; H317 STOT SE 3; H335
Diphenylmethanediisocyanate	13 - 30	9016-87-9	
o-(p-isocyanatobenzyl)phenyl isocyanate	10 - 30	5873-54-1	
Castor oil, polymer with polymethylenepolyphenylene isocyanate	3 - 13	67700-69-0	

For full text of H phrases see section 16.

Additional Information - None

SECTION 4: FIRST AID MEASURES

Description of first aid measures

Inhalation

If breathed in, move person into fresh air. Call a physician or poison control centre immediately. Keep patient warm and at rest. Keep respiratory tract clear. If breathing is difficult, give oxygen. If breathing is irregular or stopped, administer artificial respiration. If unconscious, place in recovery position and seek medical advice. Consult a physician immediately if symptoms such as shortness of breath or asthma are observed.

Skin Contact

In case of contact, immediately flush skin with soap and plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before reuse. Thoroughly clean shoes before reuse. Call a physician if irritation develops or persists. An MDI study has demonstrated that a polyglycol-based skin cleanser (such as D-TamTM, PEG-400) or corn oil may be more effective than soap and water.

Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If easy to do, remove contact lens, if worn. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

Ingestion

Gently wipe or rinse the inside of the mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Keep respiratory tract clear. Keep at rest. If a person vomits when lying on his back, place him in the recovery position. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

Most important symptoms and effects, both acute and delayed

Severe allergic skin reactions, bronchiospasm and anaphylactic shock 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.

Protection for first-aiders

No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If potential for exposure exists refer to Section 8 for specific personal protective equipment. First Aid responders should pay attention to self-protection and use the recommended protective clothing.

Notes to physician

Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours. The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Extinguish preferably with foam, carbon dioxide (CO2), or dry powder.

Unsuitable Extinguishing Media

Water may be used if no other available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous.

Specific hazards during firefighting

Do not allow run-off from fire fighting to enter drains or water courses. The pressure in sealed containers can increase under the influence of heat. Exposure to decomposition products may be a hazard to health.

Hazardous combustion products

Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.

Specific extinguishing methods

Cool containers/tanks with water spray.

Further information

Standard procedure for chemical fires. Due to reaction with water producing CO2-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Prevent fire extinguishing water from contaminating surface water or the ground water system. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters

Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Immediately evacuate personnel to safe areas. Use personal protective equipment. If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Only qualified personnel equipped with suitable protective equipment may intervene. Never return spills in original containers for re-use. Make sure that there is a sufficient amount of neutralizing/absorbent material near the storage area. The danger areas must be delimited and identified using relevant warning and safety signs.

Environmental precautions

Do not allow uncontrolled discharge of product into the environment. Do not allow material to contaminate ground water system. Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Local authorities should be advised if significant spillages cannot be contained. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and material for containment and cleaning up

Contain spillages with sand, earth or any suitable adsorbent material. Transfer to a container for disposal or recovery. Wash the spillage area with water. If possible prevent water running into sewers.

Small spillage	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Clean contaminated surface thoroughly. Sweep up or vacuum up spillage and collect in suitable container for disposal. Neutralize small spillages with decontaminant. The compositions of liquid decontaminants are given in Section 16. Remove and dispose of residues.
Large spillage	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Leave to react for at least 30 minutes. Shovel into open-top drums for further decontamination. Wash the spillage area with water. Test atmosphere for MDI vapour. Keep in suitable, closed containers for disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling	Use only with adequate ventilation. Avoid formation of aerosol. Do not breathe vapours or spray mist. Do not breathe vapours/dust. Do not swallow. Do not get in eyes or mouth or on skin. Do not get on skin or clothing. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Keep container closed when not in use. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Conditions for safe storage, including any incompatibilities	Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labelled containers. Observe label precautions. Protect from moisture. Electrical installations / working materials must comply with the technological safety standards. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Materials to avoid	Acids, Amines, Bases, Metals, Water.
Recommended storage temperature	16 – 38°C (60 – 100°F).
Storage period	12 Months.
Further information on storage stability	No decomposition if stored and applied as directed.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Occupational Exposure Limits

SUBSTANCE.	CAS No.	(8hr TWA)		(STEL)		Note:
		PEL (OSHA)	TLV (ACGIH)	PEL (OSHA)	TLV (ACGIH)	
4,4'-methylenediphenyl diisocyanate	101-68-8	-----	0.005 ppm	0.02 ppm, 0.2 mg/m^3 ceiling	-----	-----

- STEL: Short Term Exposure Limit; IFV = Inhalable Fraction & Vapor

Exposure controls

Appropriate engineering controls	Work in well ventilated zones or use proper respiratory protection.

Personal protection equipment

Eye/face protection 	Safety eyewear should be used to avoid exposure to liquid splashes, mists or dusts. Chemical splash goggles. Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded. Ensure that eyewash stations and safety showers are close to the workstation location.
Skin protection (Hand protection/ Other)  	Use chemical resistant gloves. Examples of glove materials that might provide suitable protection include: Butyl rubber, Chlorinated polyethylene, Polyethylene, Ethyl vinyl alcohol copolymers laminated ("EVAL"), Polychloroprene (Neoprene*), Nitrile/butadiene rubber ("nitrile" or "NBR"), Polyvinyl chloride ("PVC" or "vinyl"), Fluoroelastomer (Viton*). Impervious clothing: Choose body protection according to the amount and concentration of the dangerous substance at the work place. Recommended: Overall (preferably heavy cotton) or Tyvek-Pro Tech 'C' , Tyvek Pro 'F' disposable coverall.
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. In emergency, non-routine and unknown exposure situations, including confined space entries, a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA)or a full facepiece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply, should be used.
Protective measures	Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Ensure that eye flushing systems and safety showers are located close to the working place.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice. Wash face, hands and any exposed skin thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. When using do not eat, drink or smoke. Contaminated work clothing should not be allowed out of the workplace. Wash hands before breaks and immediately after handling the product. Wash hands before breaks and at the end of workday.
Environmental Exposure Controls	Prevent entry into drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Liquid
Color.	Brown
Odor	Slightly musty
Odor Threshold (ppm)	Not available.
pH (Value)	Not available.
Melting Point (°C) / Freezing Point (°C)	Not available.
Boiling point/boiling range (°C):	Not available.
Flash Point (°C)	>213°C (415°F) Open cup
Evaporation Rate	Not available.
Flammability (solid, gas)	Not available
Explosive Limit Ranges	Not available.
Vapour pressure (mmHg)	Not available
Vapour Density (Air=1)	Not available.
Density (g/ml)	Not available.

Specific Gravity	Not available.
Solubility (Water)	Not available.
Solubility (Other)	Not available.
Partition Coefficient (n-Octanol/water)	Not available.
Auto Ignition Point (°C)	Not available
Decomposition Temperature (°C)	Not available.
Kinematic Viscosity (cSt)	Not available
Explosive properties	Not explosive.
Oxidizing properties	Not available
Other information	Not available.

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions.
Chemical stability	Stable.
Possibility of hazardous reactions	Reaction with water (moisture) produces CO2-gas. Exothermic reaction with materials containing active hydrogen groups. The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents. MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface. A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.
Conditions to avoid	Extremes of temperature and direct sunlight. Exposure to air or moisture over prolonged periods.
Incompatible materials	Acids, Amines, Bases, Metals, Water.
Hazardous decomposition product(s)	Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes: Inhalation, Skin Contact, Eye Contact

Product:

Acute toxicity

Acute oral toxicityComponents	Acute toxicity estimate: 1.5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
Acute toxicity (other routes of administration)	No data available.

Serious eye damage/eye irritation

Result:	Mild eye irritation.

Respiratory or skin sensitization

Result:	Exposure routes: Respiratory Tract Species: Rat Causes sensitization.
Result:	May cause sensitisation by skin contact.
Result:	May cause sensitization by inhalation.

Carcinogenicity	Remarks: Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in a 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.
Assessment	No data available.
IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
Reproductive toxicity	
Assessment	No data available.
STOT – repeated exposure	No data available.
Aspiration toxicity	No data available.
Experience with human exposure	
Generic information	No data available.
Inhalation	No data available.
Skin contact	No data available.
Eye contact	No data available.
Ingestion	No data available.
Toxicology, Metabolism, Distribution	No data available.
Neurological effects	No data available.
Further information	
Ingestion	No data available.

Components: 4,4'-methylenediphenyl diisocyanate:

Acute toxicity	
Acute oral toxicityComponents	LD50 (Rat, male): > 10,000 mg/kg Method: OECD Test Guideline 401
Acute dermal toxicity	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402
Skin corrosion/irritation	Species: Rabbit Method: OECD Test Guideline 404 Result: Irritating to skin.
Serious eye damage/eye irritation	Species: Rabbit Result: Mild eye irritation

Respiratory or skin sensitisation	Exposure routes: Skin Species: Mouse Method: OECD Test Guideline 429 Result: May cause sensitisation by skin contact. Exposure routes: Respiratory Tract Species: Guinea pig Result: May cause sensitisation by inhalation.
Assessment	May cause sensitisation by inhalation and skin contact.
Germ cell mutagenicity	
Genotoxicity in vitro	Concentration: 200 ug/plate Metabolic activation: with and without metabolic activation Method: Directive 67/548/EEC, Annex, B.13/14 Result: negative
Genotoxicity in vivo	Application Route: Inhalation Exposure time: 3 Weeks Dose: 118 mg/m3 Method: OECD Test Guideline 474 Result: negative
Reproductive toxicity	
Effects on foetal development	Species: Rat, female Application Route: Inhalation General Toxicity Maternal: No observed adverse effect level: 4 mg/m³ Method: OECD Test Guideline 414 Result: No teratogenic effects
STOT – single exposure	Exposure routes: Inhalation Target Organs: Respiratory Tract Assessment: May cause respiratory irritation
STOT – repeated exposure	Species: Rat, male and female NOEC: 0.2 mg/m3 Exposure time: 2 yr Number of exposures: 5 d Method: OECD Test Guideline 453

Components: Diphenylmethanediisocyanate:

Acute toxicity	
Acute oral toxicityComponents	LD50 (Rat, male): > 10,000 mg/kg Method: OECD Test Guideline 401
Acute dermal toxicity	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402
Skin corrosion/irritation	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402
Serious eye damage/eye irritation	Species: Rabbit Result: Irritation to eyes, reversing within 7 days Assessment: Mild eye irritant Method: OECD Test Guideline 405
Respiratory or skin sensitisation	Exposure routes: Skin Species: Guinea pig Method: OECD Test Guideline 406 Result: May cause sensitisation by skin contact Exposure routes: Respiratory Tract Species: Rat Result: May cause sensitisation by inhalation
Assessment	May cause an allergic skin reaction., May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Germ cell mutagenicity

Genotoxicity in vitro	Concentration: 200 ug/plate Metabolic activation: with and without metabolic activation Method: Directive 67/548/EEC, Annex, B.13/14 Result: negative
Genotoxicity in vivo	Application Route: Inhalation Result: Not classified due to inconclusive data. Application Route: Inhalation Exposure time: 3 Weeks Dose: 113 mg/m3 Method: OECD Test Guideline 474 Result: negative

Reproductive toxicity

Effects on fertility	Species: Rat, male and female Application Route: Inhalation Method: OECD Test Guideline 414 Remarks: No significant adverse effects were reported
Effects on foetal development	Species: Rat, male and female Application Route: Inhalation General Toxicity Maternal: 4 mg/m³ Method: OECD Test Guideline 414 Result: No teratogenic effects
STOT – single exposure	Exposure routes: Inhalation Target Organs: Respiratory Tract Assessment: May cause respiratory irritation.
STOT – repeated exposure	Species: Rat, male and female NOEC: 0.2 mg/m3 Test atmosphere: dust/mist Exposure time: 2 yr Number of exposures: 5 d Method: OECD Test Guideline 453

Components: o-(p-isocyanatobenzyl)phenyl isocyanate:

Acute toxicity

Acute dermal toxicity	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402
Skin corrosion/irritation	Species: Rabbit Assessment: Irritant Method: OECD Test Guideline 404 Result: Irritating to skin.
Serious eye damage/eye irritation	Species: Humans Result: Irritation to eyes, reversing within 7 days Assessment: Mild eye irritant Method: OECD Test Guideline 405 Remarks: Mild eye irritation
Respiratory or skin sensitisation	Exposure routes: Skin Species: Mouse Assessment: May cause sensitisation by skin contact. Result: Causes sensitisation. Exposure routes: Respiratory Tract Species: Guinea pig Assessment: May cause sensitisation by inhalation. Result: Causes sensitisation.
Assessment	Mild eye irritation

Germ cell mutagenicity

Genotoxicity in vitro	Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative
Genotoxicity in vivo	Application Route: Inhalation Exposure time: 3 Weeks Dose: 118 mg/m3 Method: OECD Test Guideline 474 Result: negative

Reproductive toxicity

Effects on fertility	Species: Rat, female Application Route: Inhalation Method: OECD Test Guideline 414 Result: Animal testing did not show any effects on fertility. Species: Rat, male and female Application Route: Inhalation Method: OECD Test Guideline 414 Result: Animal testing did not show any effects on fertility.
Effects on foetal development	Species: Rat, male and female Application Route: Inhalation General Toxicity Maternal: No observed adverse effect level: 4 mg/m³ Method: OECD Test Guideline 414 Result: No teratogenic effects
STOT – single exposure	Exposure routes: Inhalation Target Organs: Respiratory system Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
STOT – repeated exposure	Species: Rat, male and female NOEC: 0.2 mg/m3 Exposure time: 2 yr Number of exposures: 5 d Method: OECD Test Guideline 453
Assessment	Mild eye irritation

Components: Castor oil, polymer with polymethylenepolyphenylene isocyanate

Acute toxicity

Acute oral toxicityComponents	LD50 (Rat, male): > 10,000 mg/kg Method: OECD Test Guideline 401 GLP: no
Acute dermal toxicity	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402 GLP: no
Skin corrosion/irritation	Species: Rabbit Assessment: Mild skin irritant Method: OECD Test Guideline 404 Result: Irritating to skin. GLP: no
Serious eye damage/eye irritation	Species: Rabbit Result: Based on Human Evidence Assessment: No eye irritation Method: OECD Test Guideline 405 GLP: yes

Respiratory or skin sensitisation

Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

Exposure routes: Respiratory Tract
Species: Rat
Result: Causes sensitisation.

Germ cell mutagenicity

Genotoxicity in vitro

Concentration: 200 ug/plate
Metabolic activation: with and without metabolic activation
Method: Directive 67/548/EEC, Annex, B.13/14
Result: negative
GLP: yes

Genotoxicity in vivo

Application Route: Inhalation
Result: Not classified due to inconclusive data.
GLP: yes

Application Route: Inhalation
Exposure time: 3 Weeks
Dose: 113 mg/m3
Method: OECD Test Guideline 474
Result: negative
GLP: yes

Reproductive toxicity

Effects on foetal development

Species: Rat, male and female
Application Route: Inhalation
General Toxicity Maternal: 4 mg/m³
Method: OECD Test Guideline 414
Result: No teratogenic effects
GLP: yes

STOT – single exposure

Assessment

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT – repeated exposure

Species: Rat, male and female
NOEC: 0.2 mg/m3
Test atmosphere: dust/mist
Exposure time: 2 yr
Number of exposures: 5 d
Method: OECD Test Guideline 453

Species: Rat, male and female
LOEC: 1.1 mg/m3
Test atmosphere: dust/mist
Exposure time: 336 h
Number of exposures: 6 h
Method: OECD Test Guideline 412

SECTION 12: ECOLOGICAL INFORMATION

Product:

Ecotoxicity:

M-Factor (Acute aquatic toxicity)	No data available.
M-Factor (Chronic aquatic toxicity)	No data available.
Plant toxicity	No data available.
Sediment toxicity	No data available.
Toxicity to terrestrial organisms	No data available.
Ecotoxicology Assessment Acute aquatic toxicity	No data available.
Chronic aquatic toxicity	No data available.
Toxicity data on soil	No data available.
Other organisms relevant to the environment	No data available.

Biochemical Oxygen Demand (BOD)	No data available.
Persistence and degradability	
Chemical Oxygen Demand (COD)	No data available.
BOD/COD	No data available.
ThOD	No data available.
DOB/ThOD	No data available.
Dissolved organic carbond DOC	No data available.
Physico-chemical removability	No data available.
Photodegradation	No data available.
Impact on Sewage Treatment	No data available.
Mobility in soil	
Mobility	No data available.
Distribution among environmental compartments	No data available.
Stability in soil	No data available.
Other adverse effects	
Environmental fate and pathways	No data available.
Results of PBT and vPvB assessment	No data available.
Endocrine disrupting potential	No data available.
Adsorbed organic bound halogens (AOX)	No data available.
Hazardous to the ozone layer	
Ozone-Depletion Potential	
Regulation:	40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks:	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
Additional ecological information	No data available.
Global warming potential (GWP)	No data available.

Components: 4,4'-methylenediphenyl diisocyanate:

Ecotoxicity:	
Toxicity to fish	LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 24 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC (Daphnia magna (Water flea)): >= 10 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211
Toxicity to soil dwelling organisms	NOEC (Eisenia fetida (earthworms)): >= 1,000 mg/kg Exposure time: 336 h Method: OECD Test Guideline 207
Persistence and degradability	
Biodegradability	Inoculum: Domestic sewage Concentration: 30 mg/l Result: Not biodegradable Biodegradation: 0 % Exposure time: 28 d Method: Inherent Biodegradability: Modified MITI Test (II)
Stability in water	Degradation half life(DT50): 20 hrs (25 °C) Remarks: Fresh water
Bioaccumulative potential	
Bioaccumulation	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 200 Remarks: Bioaccumulation is unlikely

Partition coefficient: n-octanol/water	log Pow: 4.51 (20 °C) pH: 7 Method: OECD Test Guideline 117

Components: Diphenylmethanediisocyanate:

Ecotoxicity:

Toxicity to fish	LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l Exposure time: 96 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 203 LC0: > 1,000 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 24 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to algae	EC50 (Desmodesmus subspicatus (green algae)): > 1,640
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC (Daphnia magna (Water flea)): >= 10 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211
Toxicity to microorganisms	EC50 (activated sludge): > 100 mg/l Exposure time: 3 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 209
Toxicity to soil dwelling organisms	EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg Exposure time: 336 h Method: OECD Test Guideline 207

Persistence and degradability

Biodegradability	Inoculum: Domestic sewage Concentration: 30 mg/l Result: Not biodegradable Biodegradation: 0 % Exposure time: 28 d Method: Inherent Biodegradability: Modified MITI Test (II)
Stability in water	Degradation half life(DT50): 0.8 d (25 °C) Method: No information available. Remarks: Fresh water

Bioaccumulative potential

Bioaccumulation	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 200 Remarks: Bioaccumulation is unlikely

Components: o-(p-isocyanatobenzyl)phenyl isocyanate:

Ecotoxicity:

Toxicity to fish	LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l Exposure time: 96 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 24 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC (Daphnia magna (Water flea)): >= 10 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211
Toxicity to microorganisms	EC50 (activated sludge): > 100 mg/l Exposure time: 3 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 209
Toxicity to soil dwelling organisms	NOEC (Eisenia fetida (earthworms)): >= 1,000 mg/kg Exposure time: 336 h Method: OECD Test Guideline 207

Persistence and degradability

Biodegradability	Inoculum: Domestic sewage Concentration: 30 mg/l Result: Not biodegradable Biodegradation: 0 % Exposure time: 28 d Method: Inherent Biodegradability: Modified MITI Test (II)

Bioaccumulative potential

Bioaccumulation	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 200 Remarks: Bioaccumulation is unlikely.
Partition coefficient: n-octanol/water	log Pow: 4.51 (20 °C) pH: 7 Method: OECD Test Guideline 117

Components: Castor oil, polymer with polymethylenepolyphenylene isocyanate:

Ecotoxicity:

Toxicity to fish	LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l Exposure time: 96 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 203 GLP: no
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 24 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202 GLP: no
Toxicity to algae	EC50 (Desmodesmus subspicatus (green algae)): > 1,640 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201 GLP: yes
Toxicity to fish (Chronic toxicity)	NOEC (Oncorhynchus mykiss (rainbow trout)): > 10000 mg/kg Exposure time: 112 d Test Type: static test Test substance: Fresh water GLP: yes
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC (Daphnia magna (Water flea)): >= 10 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211
	NOEC (Daphnia magna (Water flea)): > 10,000 mg/l Exposure time: 112 d Test Type: static test Test substance: Fresh water

Toxicity to microorganisms	EC50 (activated sludge): > 100 mg/l Exposure time: 3 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 209 GLP: no
Toxicity to soil dwelling organisms	EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg Exposure time: 336 h Method: OECD Test Guideline 207 GLP: yes

Persistence and degradability

Biodegradability	Inoculum: Domestic sewage Concentration: 30 mg/l Result: Not biodegradable Biodegradation: 0 % Exposure time: 28 d Method: Inherent Biodegradability: Modified MITI Test (II)
Stability in water	Degradation half life(DT50): 0.8 d (25 °C) Method: No information available. GLP: no Remarks: Fresh water

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods — Disposal should be in accordance with local, state or national legislation. Consult an accredited waste disposal contractor or the local authority for advice.

Additional Information — None known.

SECTION 14: TRANSPORT INFORMATION

	Land transport (U.S. DOT) *	Sea transport (IMDG)	Air transport (ICAO/IATA)
UN/ID/NA number	NA 3082	Not classified as dangerous for transport.	
Proper Shipping Name	OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (Methylene Diphenyl Diisocyanate)		
Transport hazard class(es)	9		
Packing group	III		
Labels	Class 9		
ERG Code	171		
Marine Pollutant	No		

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable for product as supplied.

* For bulk packages: UN 3082, Environmentally hazardous substance, liquid, n.o.s. (contains 4,4'-Methylenediphenyl diisocyanate (MDI)), 9, III, RQ.

SECTION 15: REGULATORY INFORMATION

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

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS No.	Component RQ (lbs)	Calculated product RQ (lbs)
4,4'-methylenediphenyl diisocyanate	101-68-8	5000	10848
chlorobenzene	108-90-7	100	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 311/312 Hazards

Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitisation
Specific target organ toxicity (single or repeated exposure)

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

4,4'-methylenediphenyl diisocyanate	101-68-8	>= 30 - < 50 %
Diphenylmethanediisocyanate	9016-87-9	>= 20 - < 30 %

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

4,4'-methylenediphenyl diisocyanate	101-68-8

California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

Country	Regulatory List	Notification
USA	TSCA	On the inventory, or in compliance with the inventory
Switzerland	CH INV	On the inventory, or in compliance with the inventory
Canada	DSL	This product contains one or several components listed in the Canadian NDSL.
Australia	AICS	Not in compliance with the inventory
New Zealand	NZIoC	Not in compliance with the inventory
Japan	ENCS	On the inventory, or in compliance with the inventory
Korea	KECI	On the inventory, or in compliance with the inventory
Philippines	PICCS	Not in compliance with the inventory
China	IECSC	On the inventory, or in compliance with the inventory
Taiwan	TCSI	On the inventory, or in compliance with the inventory

TSCA - 5(a) Significant New Use Rule List of Chemicals

No substances are subject to a Significant New Use Rule.

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1 - 16.

Date of preparation: February 19, 2018

Hazard Statement(s) Listed in: SECTION 3

H315 + H320 Causes skin and eye irritation.
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.

Additional Information:

Hazard Rating System HMIS	Health: 2 Flammability: 1 Physical Hazard: 0

Liquid decontaminants (percentages by weight or volume)

Decontaminant 1 Sodium carbonate: 5 – 10%
Liquid detergent: 0.2 – 2%
Water: to make up to 100%

Decontaminant 1 reacts slower with diisocyanates, but is more environmentally friendly than decontaminant 2.

Decontaminant 2 Concentrated ammonia solution: 3 – 8%
Liquid detergent: 0.2 – 2%
Water: to make up to 100%

Decontaminant 2 contains ammoinia. Ammonia presents health hazards. (See supplier safety information).

Information source and reference	This SDS is prepared by Res-Tek from information supplied by internal references within our company.

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