Safety Data Sheet

Preparation Date: May 1, 2019 Version: 1

SECTION 1. IDENTIFICATION

Product Identifier

Product Name	ACTIVATOR (PART A) FOR SMIDCRETE C, SMIDCRETE C BEDDING AND WALLMIX
Other Means of Identification	PROPRIETARY MDI BLEND
Recommended Use	CURING COMPONENT OF 2-PART FLEXIBLE POLYURETHANE COATING
Restrictions on Use	NO INFORMATION AVAILABLE
Initial Supplier Identifier	PENNKOTE LIMITED 1950 BOUNDARY ROAD WHITBY, ON L1N 8P8 CANADA
Emergency Telephone Number	CANUTEC: 1-888-226-8832 (1-888-CAN-UTEC)

SECTION 2. HAZARD IDENTIFICATION

Classification

ACUTE TOXICITY (INHALATION):	CATEGORY 4
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	CATAEGORY 3 (RESPIRATORY SYSTEM)
RESPIRATORY SENSITIZATION:	CATEGORY 1
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE	CATEGORY 1 (RESPIRATORY TRACT)
SKIN IRRITATION:	CATEGORY 2
SKIN SENSITIZATION:	CATEGORY 1
EYE IRRITATION:	CATEGORY 2B

Label Elements

HAZARD PICTOGRAMS:

SIGNAL WORD:	DANGER
HAZARD STATEMENTS:	HARMFUL IF INHALED MAY CAUSE RESPIRATORY IRRITATION MAY CAUSE ALLERGY OR ASTHMA SYMPTOMS OR BREATHING DIFFICULTIES IF INHALED CAUSES DAMAGE TO ORGANS (RESPIRATORY TRACT) THROUGH PROLONGED OR REPEATED EXPOSURE IF INHALED CAUSES SKIN IRRITATION MAY CUASE AN ALLERGIC SKIN REACTION CAUSES EYE IRRITATION
PRECAUTIONARY STATEMENTS:	
PREVENTION:	AVOID BREATHING DUST, MIST, GAS, VAPOURS OR SPRAY DO NOT EAT, DRINK OR SMOKE WHEN USING THIS PRODUCT WASH SKIN AND FACE THOROUGHLY AFTER HANDLING USE ONLY OUTDOORS OR IN A WELL-VENTILATED AREA CONTAMINATED WORK CLOTHING MUST NOT BE ALLOWED OUT OF THE WORKPLACE WEAR PROTECTIVE GLOVES IN CASE OF INADEQUATE VENTILATION WEAR RESPIRATORY PROTECTION. THE TYPE OF RESPIRATORY PROTECTION MUST COMPLY WITH THE REQUIREMENTS SET FORTH IN OSHA'S RESPIRATORY PROTECTION STANDARD (29 CFR 1910.134) OR REGIONAL STANDARDS. FOR ADDITIONAL DETAILS SEE SECTION 8 OF THE SDS
RESPONSE:	GET MEDICAL ATTENTION IF YOU FEEL UNWELL IF ON SKIN: WASH WITH PLENTY OF SOAP AND WATER IF SKIN IRRITATION OR RASH OCCURS: GET MEDICAL ATTENTION WASH CONTAMINATED CLOTHING BEFORE REUSE IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES, IF PRESENT AND EASY TO DO. CONTINUE RINSING IF EYE IRRITATION PRESISTS: GET MEDICAL ATTENTION IF INHALED: IF BREATHING IS DIFFICULT, REMOVE TO FRESH AIR AND KEEP AT REST IN A POSITION COMFORTABLE FOR BREATHING IF EXPERIENCING RESPIRATORY SYSTEMS: CALL A DOCTOR OR EMERGENCY MEDICAL FACILITY
STORAGE:	STORE LOCKED UP IN A WELL VENTILATED PLACE KEEP CONTAINER TIGHTLY CLOSED
DISPOSAL:	DISPOSE OF CONTENTS AND CONTAINER IN ACCORDANCE WITH EXISTING FEDERAL, PROVINCIAL, STATE AND LOCAL LAWS

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

WEIGHT PERCENT	CAS NO	COMPONENTS
40-70%	201615-11-4	ALLOPHANATE MODIFIED DIPHENYLMETHANE DIISOCYANATE
30-60%	101-68-8	4,4'-DIPHENYLMETHANE DIISOCYANATE (MDI)
0.1-1%	26447-40-5	DIPHENYLMETHANE DIISOCYANATE (MDI) MIXED ISOMERS

Notes

SECTION 4. FIRST-AID MEASURES

Most Important Symptoms and Effects, Acute and Delayed
ACUTE: DIISOCYANATE VAPOURS OR MIST AT CONCENTRATIONS ABOVE THE TLV OR PEL CAN IRRITATE (BURNING SENSATION) THE MUCOUS MEMBRANES IN THE RESPIRATORY TRACT (NOSE, THROAT, LUNGS) CAUSING RUNNY NOSE, SORE THROAT, COUGHING, CHEST DISCOMFORT, SHORTNESS OF BREATH AND REDUCED LUNG FUNCTION (BREATHING OBSTRUCTION). PEOPLE WITH PRE-EXISTING NON-SPECIFIC BRONCIAL HYPERREACTIVITY CAN RESPOND TO CONCENTRATIONS BELOW THE TLV OR PEL WITH SIMILAR SYMPTOMS AS WELL AS ASTHMA ATTACK OR ASTHMA-LIKE SYMPTOMS. EXPOSURE WELL ABOVE THE TLV OR PEL MAY LEAD TO BRONCHITIS, BRONCHIAL SPASM AND PULMONARY EDEMA (FLUID IN LUNGS). CHEMICAL OR HYPERSENSITIVITY PNEUMONITIS, WITH FLU-LIKE SYMPTOMS (LIKE FEVER, CHILLS) HAS ALSO BEEN REPORTED. THESE SYMPTOMS CAN BE DELAYED UP TO SEVERAL HOURS AFTER EXPOSURE. THESE EFFECTS ARE USUALLY REVERSIBLE
CAUSES SKIN IRRIATION WITH SYMPTOMS OF REDDENING, ITCHING AND SWELLING. PEOPLE PREVIOUSLY SENSITIZED CAN EXPERIENCE ALLERGIC SKIN REACTION WITH SYMPTOMS OF REDDENING, ITCHING, SWELLING AND RASH. CURED MATERIAL IS HARD TO REMOVE. CONTACT WITH MDI CAN CAUSE DISCOLOURATION
CAUSES EYE IRRITATION WITH SYMPTOMS OF REDDENING, TEARING, STINGING AND SWELLING. MAY CAUSE TEMPORARY CORNEAL INJURY. VAPOUR OR AEROSOL MAY CAUSE IRRITATION WITH SYMPTOMS OF BURNING AND TEARING
MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT. SYMPTOMS MAY INCLUDE ABDOMINAL PAIN, NAUSEA, VOMITING AND DIARRHEA
DELAYED: SYMPTOMS AFFECTING THE RESPIRATORY TRACT CAN ALSO OCCUR SEVERAL HOURS AFTER OVER EXPOSURE

Inhalation
MOVE TO AN AREA FREE FROM FURTHER EXPOSURE. EXTREME ASTHMATIC REACTIONS THAT MAY OCCUR IN SENSITIZED PERSONS CAN BE LIFE THREATENING. GET MEDICAL ATTENTION IMMEDIATELY. ADMINISTER OXYGEN OR ARTIFICIAL RESPIRATION IF NEEDED. ASTHMATIC SYMPTOMS MAY DEVELOP AND MY BE IMMEDIATE OR DELAYED UP TO SEVERAL HOURS

Skin Contact
IF DIRECT SKIN CONTACT WITH ISOCYANATES OCCURS, IMMEDIATELY REMOVE CONTAMINATED CLOTHING AND SHOES. WIPE OFF THE ISOCYANATE PRODUCT FROM THE SKIN USING DRY TOWELS OR OTHER SIMILAR ABSORBENT FABRIC. IF READILY AVAILABLE, APPLY A POLYGLYCOL-BASED CLEANSER OR CORN OIL. WASH WITH SOAP AND WARM WATER AND PAT DRY. IF A POLYGLYCOL-BASED CLEANSER IS NOT AVAILABLE, WASH WITH SOAP AND WARM WATER FOR 15 MINUTES. IF AVAILABLE, USE A WIPE TEST PAD TO VERIFY DECONTAMINATION IS COMPLETE. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS. DISCARD OR WASH CONTAMINATED CLOTHING BEFORE REUSE

Eye Contact
IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. USE LUKEWARM WATER IF POSSIBLE. USE FINGERS TO ENSURE THAT EYELIDS ARE SEPARATED AND THAT THE EYE IS BEING IRRIGATED. GET MEDICAL ATTENTION

Ingestion
DO NOT INDUCE VOMITING. WASH MOUTH OUT WITH COLD WATER. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION

Notes to Physician
EYES: STAIN FOR EVIDENCE OF CORNEAL INJURY. IF CORNEA IS BURNED, INSTILL ANTIBIOTIC/STEROID PREPARATION AS NEEDED. WORKPLACE VAPOURS COULD PRODUCE REVERSIBLE CORNEAL EPITHELIAL EDEMA IMPARING VISION
SKIN: THE COMPOUND IS A SKIN SENSITIZER. TREAT SYMPTOMATICALLY AS FOR CONTACT DERMATITIS OR THERMAL BURN
INGESTION: TREAT SYMPTOMATICALLY. THERE IS NO SPECIFIC ANTIDOTE. INDUCING VOMITING IS CONTRAINDICATED BECAUSE OF THE IRRITATING NATURE OF THE COMPOUND.
INHALATION: TREATMENT IS ESSENTIALLY SYMPTOMATIC. A PERSON HAVING A DERMAL OR PULMONARY SENSITIZATION REACTION TO THIS MATERIAL SHOULD BE REMOVED FROM FURTHER EXPOSURE TO ANY DIISOCYANATE

SECTION 5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
DRY CHEMICAL, CARBON DIOXIDE (CO2), FOAM, WATER SPRAY FOR LARGE FIRES

Unsuitable Extinguishing Media
HIGH VOLUME WATER JET

Fire Fighting Procedure
FIREFIGHTERS SHOULD WEAR NFPA COMPLIANT STRUCTURAL FIREFIGHTING PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED BREATHING APPARATUS AND NFPA COMPLIANT HELMET, HOOD, BOOTS AND GLOVES. AVOID CONTACT WITH PRODUCT. DECONTAMINATE EQUIPMENT AND PROTECTIVE CLOTHING PRIOR TO REUSE. DURING A FIRE, ISOCYANATE VAPOURS AND OTHER IRRITATING, HIGHLY TOXIC GASES MAY BE GENERATED BY THERMAL DECOMPOSITION OR COMBUSTION. EXPOSURE TO HEATED DIISOCYANATE CAN BE EXTREMELY DANGEROUS

Hazardous Decomposition Products
BY FIRE AND HIGH HEAT: CARBON DIOXIDE (CO2), CARBON MONOXIDE (CO), OXIDES OF NITROGEN (NOx), DENSE BLACK SMOKE, ISOCYANIC ACID, OTHER UNDETERMINED COMPOUNDS

Unusual Fire/Explosion Hazards
CLOSED CONTAINER MAY FORCIBLY RUPTURE UNDER EXTREME HEAT OR WHEN CONTENTS ARE CONTAMINATED WITH WATER (CO2 FORMED). USE COLD-WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS TO MINIMIZE THE RISK OF RUPTURE. LARGE FIRES CAN BE EXTINGUISHED WITH LARGE VOLUMES OF WATER APPLIED FROM A SAFE DISTANCE, SINCE REACTION BETWEEN WATER AND HOT DIISOCYANATE CAN BE VIGOROUS

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill and Leak Procedures
IMPLEMENT SITE EMERGENCY RESPONSE PLAN. EVACUATE NON-EMERGENCY PERSONNEL. THE MAGNITUDE OF THE EVACUATION DEPENDS UPON THE QUANTITY RELEASED, SITE CONDITIONS AND THE AMBIENT TEMPERATURE. ISOLATE THE AREA AND PREVENT ACCESS OF UNAUTHORIZED PERSONNEL. NOTIFY MANAGEMENT. CALL CANUTEC AT 1-888-226-8832 FOR ASSISTANCE AND ADVISE.

WEAR NECESSARY PERSONAL PROTECTIVE EQUIPMENT (PPE) AS SPECIFIED IN THE SDS OR THE SITE EMERGENCY RESPONSE PLAN. VENTILATE AND REMOVE IGNITION SOURCES. CONTROL THE SOURCE OF THE LEAK. CONTAIN THE RELEASED MATERIAL BY DAMMING, DIKING, RETAINING OR DIVERTING INTO AN APPROPRIATE CONTAINMENT AREA. ABSORB OR PUMP OFF AS MUCH OF THE SPILLED MATERIAL AS POSSIBLE. WHEN USING ABSORBENT, COMPLETELY COVER THE SPILL AREA WITH SUITABLE ABSORBENT MATERIAL SUCH AS VERMICULITE, KITTY LITTER, ETC AND ALLOW FOR THE ABSORBENT MATERIAL TO ABSORB THE SPILLED LIQUID. SHOVEL THE ABSORBENT MATERIAL INTO AN APPROVED METAL CONTAINER DO NOT FILL THE CONTAINER MORE THAN 2/3 FULL TO ALLOW FOR EXPANSION AND DO NOT TIGHTEN THE LID ON THE CONTAINER. REPEAT APPLICATION OF ABSORBENT MATERIAL UNTIL ALL LIQUID HAS BEEN REMOVED FROM THE SURFACE. FOR SPILLS INVOLVING A SOLID PRODUCT, REMOVE MECHANICALLY (SWEEPING, VACUUMING SHOVELLING, ETC) AND COLLECT AND PLACE INTO AN APPROVED METAL CONTAINER

DECONTAMINATE THE SPILL SURFACE AREA USING A NEUTRALIZATION SOLUTION (SEE LIST ON THE SDS) SCRUBBING THE SURFACE WITH A BROOM OR BRUSH HELPS THE DECONTAMINATION SOLUTION TO PENETRATE INTO POROUS SURFACES. WAIT AT LEAST 15 MINUTES AFTER FIRST APPLICATION OF THE NEUTRALIZATION SOLUTION. COVER THE AREA WITH ABSORBENT MATERIAL AND SHOVEL THIS INTO AN APPROPRIATE METAL CONTAINER. RESIDUAL SURFACE CONTAMINATION CAN BE CHECKED USING A WIPE TEST PAD TO VERIFY DECONTAMINATION IS COMPLETE. IF THE WIPE TEST PAD DEMONSTRATES THAT ISOCYANATE REMAINS ON THE SURFACE (RED COLOUR ON PAD), REPEAT APPLICATIONS OF NEUTRALIZATION SOLUTION WITH SCRUBBING, FOLLOWED BY ABSORBENT UNTIL THE SURFACE IS DECONTAMINATED (NO COLOUR CHANGE ON WIPE PAD). APPLY LID LOOSELY TO METAL WASTE CONTAINER (DO NOT TIGHTEN THE LID BECAUSE CARBON DIOXIDE GAS AND HEAT CAN BE GENERATED FROM THE NEUTRALIZATION PROCESS). WITH THE LID STILL LOOSELY IN PLACE, MOVE THE CONTAINER TO AN ISOLATED, WELL-VENTILATED AREA TO ALLOW RELEASE OF CARBON DIOXIDE. AFTER 72 HOURS, SEAL THE CONTAINER AND PROPERLY DISPOSE OF THE WASTE MATERIAL AND ANY CONTAMINATED EQUIPMENT IN ACCORDANCE WITH EXISTING FEDERAL, PROVINCIAL AND LOCAL REGULATIONS

Additional Spill Procedures/Neutralization

PRODUCT OR PRODUCT MIXTURES THAT HAVE BEEN SHOWN TO BE EFFECTIVE NEUTRALIZATION SOLUTIONS FOR DECONTAMINATING SURFACES, TOOLS OR EQUIPMENT THAT HAVE BEEN IN CONTACT WITH AN ISOCYANATE INCLUDE (BUT ARE NOT LIMITED TO) THE FOLLOWING

1) COLOURIMETRIC LABORATORIES INC (CLI) – (847) 803-3737
   ISOCYANATE DECONTAMINATION SOLUTION
2) SPARTAN CHEMICAL COMPANY – (800) 537-8990
   SPARTAN SHINELINE EMULSIFIER PLUS (STRIPPING SOLUTION)
   SPARTAN SC-200 HEAVY DUTY CLEANER
3) ZEP COMMERCIAL HEAVY DUTY FLOOR STRIPPER
4) MIXTURE OF 90% WATER, 10% NON-IONIC SURFACTANT (LIKE PLURAFAC SL-62)
5) MIXTURE OF 75% WATER, 20$ NON-IONIC SURFACTANT AND 5% N-PROPANOL
6) MIXTURE OF 80% WATER, 10% NON-IONIC SURFACTANT, 5% N-PROPANOL AND 5% AMMONIUM HYDROXIDE (HOUSEHOLD AMMONIA)

NOTE: ALWAYS WEAR PROPER PPE WHEN CLEANING UP AN ISOCYANATE SPILL OR WHEN DECONTAMINATING SURFACES, TOOLS OR EQUIPMENT USING A NEUTRALIZATION SOLUTION. IT MAY TAKE TWO OR MORE APPLICATIONS OF THE NEUTRALIZATION SOLUTION TO DECONTAMINATE THE SURFACE

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling
DO NOT BREATHE VAPOURS, MISTS OR DUSTS. USE ADEQUATE VENTILATION TO KEEP AIRBORNE ISOCYANATE LEVELS BELOW THE EXPOSURE LIMITS. WEAR RESPIRATORY PROTECTION IF MATERIAL IS HEATED, SPRAYED, USED IN A CONFINED SPACE OR IF THE EXPOSURE LIMIT IS EXCEEDED. WARNING PROPERTIES (IRRITATION OF THE EYES, NOSE AND THROAT OR ODOR) ARE NOT ADEQUATE TO PREVENT OVEREXPOSURE FROM INHALATION. THIS MATERIAL CAN PRODUCE ASTHMATIC SENSITIZATION UPON EITHER SINGLE INHALATION EXPOSURE TO A RELATIVELY HIGH CONCENTRATION OR UPON REPEATED INHALATION EXPOSURES TO LOWER CONCENTRATIONS. INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR ALLERGIC REACTIONS TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOUR OR SPRAY MIST. AVOID CONTACT WITH SKIN AND EYES. WEAR APPROPRIATE EYE AND SKIN PROTECTION. WASH THOROUGHLY AFTER HANDLING. DO NOT BREATHE SMOKE AND GASES CREATED BY OVERHEATING OR BURNING THIS MATERIAL. DECOMPOSITION PRODUCTS CAN BE HIGHLY TOXIC AND IRRITATING. STORE IN TIGHTLY CLOSED CONTAINERS TO PREVENT MOISTURE CONTAMINATION. DO NOT RESEAL IF CONTAMINATION IS SUSPECTED

Storage Period
6 MONTHS

Storage Temperature
Minimum: 10°C (50°F)
Maximum: 30°C (86°F)

Storage Conditions
EMPLOYEE EDUCATION AND TRAINING IN THE SAFE USE AND HANDLING OF THIS PRODUCT ARE REQUIRED UNDER THE OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200

Substances to Avoid
WATER, AMINES, STRONG BASES, ALCOHOLS, COPPER ALLOYS

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE RECOMMENDATION IN THIS SECTION SHOULD NOT BE A SUBSTITUTE FOR A PERSONAL PROTECTIVE EQUIPMENT (PPE) ASSESSMENT PERFORMED BY THE EMPLOYER

Exposure Limits

4,4'-Diphenylmethane Diisocyanate (MDI) (101-68-8)

US. ACGIH THRESHOLD LIMIT VALUES
TIME WEIGHTED AVERAGE 0.005 PPM

US. OSHA TABLE Z-1 LIMITS FOR AIR CONTAMINANTS (29 CFR 1910.1000)
CEILING LIMIT VALUE 0.02 PPM, 0.2 MG/M3

US. ACGIH THRESHOLD LIMIT VALUES
TIME WEIGHTED AVERAGE 0.005 PPM

US. OSHA TABLE Z-1 LIMITS FOR AIR CONTAMINANTS (29 CFR 1910.1000)
CEILING LIMIT VALUE 0.02 PPM, 0.2 MG/M3

ANY COMPONENT WHICH IS LISTED IN SECTION 3 AND IS NOT LISTED IN THIS SECTION DOES NOT HAVE A KNOWN ACGIH TLV, OSHA PEL OR SUPPLIER RECOMMENDED OCCUPATIONAL EXPOSURE LIMIT

PLEASE REFER TO THE EXPOSURE LIMIT LEGISLATED FOR THE REGION IN WHICH THE SUBSTANCE IS USED

Industrial Hygiene/Ventilation Measures

LOCAL EXHAUST SHOULD BE USED TO MAINTAIN LEVELS BELOW THE TLV WHENEVER MDI IS HEATED, SPRAYED OR AEROSOLIZED. STANDARD REFERENCE SOURCES REGARDING INDUSTRIAL VENTILATION (LIKE ACGIH INDUSTRIAL VENTILATION MANUAL) SHOULD BE CONSULTED FOR GUIDANCE ABOUT ADEQUATE VENTILATION. TO ENSURE THAT PUBLISHED EXPOSURE LIMITS HAVE NOT BEEN EXCEEDED, MONITORING FOR AIRBOURNE DIISOCYANATE SHOULD BECOME PART OF THE OVERALL EMPLOYEE EXPOSURE CHARACTERIZATION PROGRAM. NIOSH, OSHA AND OTHERS HAVE DEVELOPED SAMPLING AND ANALYTICAL METHODS.

Respiratory Protection
AIRBOURNE MDI CONCENTRATION GREATER THAN THE ACGIH TLV-TWA (TLV) OR OSHA PEL-C (PEL) CAN OCCUR IN INADEQUATELY VENTILATED ENVIRONMENTS WHEN MDI IS SPRAYED, AEROSOLIZED OR HEATED. IN SUCH CASES, RESPIRATORY PROTECTION MUST BE WORN. THEY TYPE OF RESPIRATORY PROTECTION SELECTED MUST COMPLY WITH THE REQUIREMENTS SET FORTH IN OSHA'S RESPIRATORY PROTECTION STANDARD (20 CFR 1910.134). THE TYPE OF RESPIRATORY PROTECTION AVAILABLE INCLUDES 1) AN ATMOSPHERE SUPPLYING RESPIRATOR SUCH AS A SELF-CONTAINED BREATHING APPARATUS (SCBA'S) OR A SUPPLIED RESPIRATOR (SAR) IN THE POSITIVE PRESSURE OR CONTINUOUS FLOW MODE, OR 2) AN AIR-PURIFYING RESPIRATOR (APR). IF AN APR IS SELECTED THEN CHANGE OUT SCHEDULE, BASED ON THE OBJECTIVE INFORMATION OR DATA THAT WILL ENSURE THAT THE CARTRIDGES ARE CHANGED OUT BEFORE THE END OF THEIR SERVICE LIFE, MUST BE DEVELOPED AND IMPLEMENTED. THE BASIS FOR THE CHANGE OUT SCHEDULE MUST BE DESCRIBED IN THE WRITTEN RESPIRATOR PROGRAM. FURTHER, IF AN APR IS SELECTED, THE AIRBOURNE DIISOCYANATE CONCENTRATION MUST BE NO GREATER THAN 10 TIMES THE TLV OR PEL. THE RECOMMENDED APR CARTRIDGE IS AN ORGANIC VAPOUR/PARTICULATE FILTER COMBINATION CARTRIDGE (OV/P100)

Hand Protection
ENSURE GLOVES REMAIN IN GOOD CONDITION DURING USE AND REPLACE IF ANY DETERIORATION IS OBSERVED

GLOVES SHOULD BE WORN. NITRILE RUBBER SHOWED EXCELLENT RESISTANCE. BUTYL RUBBER, NEOPRENE AND PVC ARE ALSO EFFECTIVE

Eye/Face Protection
WHEN DIRECTLY HANDLING LIQUID PRODUCT, EYE PROTECTION IS REQUIRED. EXAMPLES OF EYE PROTECTION INCLUDE A CHEMICAL SAFETY GOOGLE OR CHEMICAL SAFETY GOGGLE IN CONJUNCTION WITH A FULL FACE SHIELD WHEN THERE IS A GREATER RISK OF SPLASH
EMERGENCY SHOWERS AND EYE WASH STATIONS SHOULD BE AVAILABLE. EDUCATE AND TRAIN EMPLOYEES IN THE SAFE USE AND HANDLING OF THIS PRODUCT

Skin Protection
AVOID ALL SKIN CONTACT. DEPENDING ON THE CONDITIONS OF USE, COVER AS MUCH OF THE EXPOSED SKIN AREA AS POSSIBLE WITH APPROPRIATE CLOTHING TO PREVENT SKIN CONTACT. ANIMAL TESTS AND OTHER RESEARCH INDICATE THAT SKIN CONTACT WITH MDI CAN PLAY A ROLE IN CAUSING ISOCYANATE SENSITIZATION AND RESPIRATORY REACTION. THIS REFINFORCES THE NEED TO PREVENT DIRECT SKIN CONTACT WITH ISOCYANATES

Medical Surveillance
ALL APPLICANTS WHO ARE ASSIGNED TO AN ISOCYANATE WORK AREA SHOULD UNDERGO A PRE-PLACEMENT MEDICAL EVALUATION. A HISTORY OF ECZEMA OR RESPIRATORY ALLERGIES SUCH AS HAY FEVER, ARE POSSIBLE REASONS FOR MEDICAL EXCLUSION FROM ISOCYANATE AREAS. APPLICANTS WITH A HISTORY OF PRIOR ISOCYANATE SENSITIZATION SHOULD BE EXCLUDED FROM FURTHER WORK WITH ISOCYANATES. A COMPREHENSIVE ANNUAL MEDICAL SURVEILLANCE PROGRAM SHOULD BE INSTITUTED FOR ALL EMPLOYEES WHO ARE POTENTIALLY EXPOSED TO DIISOCYANATES. ONCE A WORKER HAS BEEN DIAGNOSED AS SENSITIZED TO ANY ISOCYANATE, NO FURTHER EXPOSURE CAN BE PERMITTED.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	LIQUID
Odour & Appearance:	YELLOW, SLIGHTLY MUSTY ODOUR
Odour Threshold:	N.AV.
pH:	N.AV.
Freezing Point:	N.AV.
Boiling Point:	194-199 °C (381.2-390.2 °F) @ 5 mmHg ESTIMATED BASED ON COMPONENT(S)
Flash Point:	221.11 °C (430 °F) (PENSKY-MARTENS CLOSED CUP) (ASTM D-93)
Evaporation Rate:	N. AV.
Upper and Lower Explosive Limit:	N.AV.
Vapour Pressure:	<0.0001 mmHg @ 25 °C (77 °F)
Vapour Density (air = 1):	N.AV.
Density:	1.198 g/cm³
Relative Vapour Density:	N.AV.
Specific Gravity:	1.15 @ 25 °C (77 °F)
Solubility in Water:	INSOLUBLE – REACTS SLOWLY WITH WATER TO LIBERATE CO2 GAS
Partition Coefficient, n-Octanol / Water (Log Kow)	N.AV.
Auto-ignition Temperature:	N.AV.
Decomposition Temperature:	NOT ESTABLISHED
Dynamic Viscosity:	N.AV.
Kinematic Viscosity:	N.AV.
Bulk Density:	APPROX 1.198 KG/M3

SECTION 10. STABILITY AND REACTIVITY

Hazardous Reactions
CONTACT WITH MOISTURE, OTHER MATERIALS THAT REACT WITH ISOCYANATES, OR TEMPERATURES ABOVE 177 °C (350 °F)

Incompatible Materials
WATER, AMINES, STRONG BASES, ALCOHOLS, COPPER ALLOYS

Hazardous Decomposition Products
BY FIRE AND HIGH HEAT: CARBON DIOXIDE (CO2), CARBON MONOXIDE (CO), OXIDES OF NITROGEN (NOx) DENSE BLACK SMOKE, ISOCYANATE, ISOCYANIC ACID, OTHER UNDETERMINED COMPOUNDS

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

INHALATION
SKIN CONTACT
EYE CONTACT

Health Effects and Symptoms
Acute:
DIISOCYANATE VAPOURS OR MIST AT CONCENTRATIONS ABOVE THE TLV OR PEL CAN IRRITATE (BURNING SENSATION) THE MUCOUS MEMBRANES IN THE RESPIRATORY TRACT (NOSE, THROAT, LUNGS) CAUSING RUNNY NOSE, SORE THROAT, COUGHING, CHEST DISCOMFORT, SHORTNESS OF BREATH AND REDUCED LUNG FUNCTION (BREATHING OBSTRUCTION)

PERSONS WITH A PRE-EXISTING, NON-SPECIFIC BRONCHIAL HYPERREACTIVITY CAN RESPOND TO CONCENTRATIONS BELOW THE TLV OR PEL WITH SIMILAR SYMPTOMS AS WELL AS ASTHMA ATTACK OR ASTHMA-LIKE SYMPTOMS. EXPOSURE WELL ABOVE THE TLV OR PEL MAY LEAD TO BRONCHITIS, BRONCHIAL SPASM AND PULMONARY EDEMA (FLUID IN LUNGS). CHEMICAL OR HYPER-SENSITIVITY PNEUMONITIS, WITH FLU LIKE SYMPTOMS LIKE CHILLS AND FEVER HAS ALSO BEEN REPORTED. THESE SYMPTOMS CAN BE DELAYED UP TO SEVERAL HOURS AFTER EXPOSURE. THESE EFFECTS ARE USUALLY REVERSIBLE

CAUSES SKIN IRRITATION WITH SYMPTOMS OF REDDENING, ITCHING AND SWELLING. PEOPLE PREVIOUSLY SENSITIZED CAN EXPERIENCE ALLERGIC SKIN REACTION WITH SYMPTOMS OF REDDENING, ITCHING, SWELLING AND RASH. CURED MATERIAL IS DIFFICULT TO REMOVE. CONTACT WITH MDI CAN CAUSE DISCOLOURATION.

CAUSES EYE IRRITATION WITH SYMPTOMS OF REDDENING, TEARING, STINGING AND SWELLING. MAY CAUSE TEMPORARY CORNEAL INJURY. VAPOUR OR AEROSOL MAY CAUSE IRRITATION WITH SYMPTOMS OF BURNING AND TEARING

MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT. SYMPTOMS MAY INCLUDE ABDOMINAL PAIN, NAUSEA, VOMITING AND DIARRHEA

Chronic:
AS A RESULT OF PREVIOUS REPEATED OVER-EXPOSURES OR A SINGLE LARGE DOSE, CERTAIN PEOPLE MAY DEVELOP SENSITIZATION TO ISOCYANATES (ASTHMA OR ASTHMA-LIKE SYMPTOMS) THAT MAY CAUSE THEM TO REACT TO A LATER EXPOSURE TO ISOCYANATES AT LEVELS WELL BELOW THE TLV OR PEL. THESE SYMPTOMS, WHICH CAN INCLUDE CHEST TIGHTNESS, WHEEZING, COUGH, SHORTNESS OF BREATH OR ASTHMATIC ATTACK, COULD BE IMMEDIATE OR DELAYED UP TO SEVERAL HOURS AFTER EXPOSURE. EXTREME ASTHMATIC REACTIONS CAN BE LIFE THREATENING. SIMILAR TO MANY NON-SPECIFIC ASTHMATIC RESPONSES, THERE ARE REPORTS THAT ONCE SENSITIZED A PERSON CAN EXPERIENCE THESE SYMPTOMS UPON EXPOSURE TO DUST, COLD AIR OR OTHER IRRITANTS. THIS INCREASED LUNG SENSITIVITY CAN PERSIST FOR WEEKS AND IN SEVERE CASES FOR SEVERAL YEARS. SENSITIZATION CAN BE PERMANENT. CHRONIC OVER-EXPOSURE TO ISOCYANATES HAS ALSO BEEN REPORTED TO CAUSE LUNG DAMAGE (INCLUDING FIBROSIS, DECREASE IN LUNG FUNCTION) THAT MAY BE PERMANENT
PROLONGED CONTACT WITH SKIN CAN CAUSE REDDENING, SWELLING, RASH AND, IN SOME CASES, SKIN SENSITIZATION. ANIMAL TESTS AND OTHER RESEARCH INDICATE THAT SKIN CONTACT WITH MDI CAN PLAY A ROLE IN CAUSING ISOCYANATE SENSITIZATION AND RESPIRATORY REACTION. THIS DATA REINFORCES THE NEED TO PREVENT DIRECT SKIN CONTACT WITH ISOCYANATES

PROLONGED VAPOUR CONTACT WITH THE EYES MAY CAUSE CONJUNCTIVITIS

Delayed:
SYMPTOMS AFFECTING THE RESPIRATORY TRACT CAN ALSO OCCUR SEVERAL HOURS AFTER OVER-EXPOSURE

Toxic Data for:
TOXICITY DATA BASED ON POLYMERIC MDI (A MIXTURE OF MONOMERS AND HIGHER MOLECULAR WEIGHT OLIGOMERS)

Acute Oral Toxicity
LC50: > 2,000 mg/kg (RAT, MALE/FEMALE)

Acute Inhalation Toxicity
LC50: 0.49 mg/l, 490 mg/m3, 4 h, AEROSOL (RAT)
THE TEST ATMOSPHERE GENERATED IN THE ANIMAL STUDY IS NOT REPRESENTATIVE OF WORKPLACE ENVIRONMENTS, HOW THE SUBSTANCE IS PLACED ON THE MARKET AND HOW IT CAN BE EXPECTED TO BE USED. THUS, THE TEST RESULT CANNOT BE DIRECTLY APPLIED FOR THE PURPOSE OF ASSESSING HAZARD. BASED ON EXPERT JUDGEMENT AND THE WEIGHT OF THE EVIDENCE, A MODIFIED CLASSIFICATION FOR ACUTE INHALATION TOXICITY IS JUSTIFIED

Acute Dermal Toxicity
LD50: > 9,400 mg/kg (RABBIT, MALE/FEMALE) (OECD TEST GUIDELINE 402

Skin Corrosion / Irritation
RABBIT, SLIGHTLY IRRITATING

Repeated Dose Toxicity
90 DAYS, INHALATION: NOAEL: 1 mg/m3 (RAT, MALE/FEMALE, 6 HRS/DAY, 5 DAYS/WEEK)
IRRITATION TO LUNGS AND NASAL CAVITY

2 YEARS, INHALATION: NOAEL: 0.2 (RAT, MALE/FEMALE, 6 HRS/DAY, 5 DAYS/WEEK)
IRRITATION TO LUNGS AND NASAL CAVITY

Mutagenicity
GENETIC TOXICITY IN VITRO:
BACTERIAL – GENE MUTATION ESSAY: NEGATIVE (SALMONELLA TYPHIMURIUM, METABOLIC ACTIVATION: WITH/WITHOUT)

Carcinogenicity
RAT, MALE/FEMALE, INHALATION, 2 YEARS, 6 HRS/DAY, 5 DAYS/WEEK
LOAEL: 6 mg/l

POLYMERIC MDI HAS BEEN CLASSIFIED AS IARC GROUP 3 (NOT CLASSIFIABLE AS TO ITS CARCINOGENICITY TO HUMANS – 1999) INDICATING THERE IS INADEQUATE EVIDENCE AVAILABLE TO DESCRIBE THE CARCINOGENIC POTENTIAL. EPIDEMIOLOGICAL STUDIES FOUND NO ASSOCIATION BETWEEN ISOCYANATES AND CANCER. IN CHRONIC EXPOSURE STUDIES IN RODENTS, PMDI PRODUCED TUMOURS ONLY AT THE HIGHEST EXPOSURE LEVEL OF 6 mg/m3. THIS EXPOSURE LEVEL IS SIGNIFICANTLY ABOVE THE TLV FOR MDI (0.051 mg/m3). BASED ON THE WEIGHT OF THE EVIDENCE, A DETERMINATION OF NOT CLASSIFIED FOR CARCINOGENICITY IS JUSTIFIED

Developmental Toxicity/Teratogenicity
RAT, FEMALE, INHALATION, GESTATION DAYS 6-15, 6 HRS/DAY, NOAEL (TERATOGENICITY): 12 mg/m3, NOAEL (MATERNAL): 4 mg/m3
NO TERATOGENIC EFFECTS OBSERVED AT DOSES TESTED
FETOTOXICITY SEEN ONLY WITH MATERNAL TOXICITY

Toxicity Data for Allophanate Modified Diphenylmethane Diisocyanate
SEE DATA ABOVE FOR POLYMERIC MDI

Toxicity Data for 4,4'-Diphenylmethane Diisocyanate (MDI)

Acute Oral Toxicity
LD50: >7,616 mg/kg (RAT) (OECD TEST GUIDELINE 401)

Acute Inhalation Toxicity
LC50: 0.368 mg/l, 4 H, DUST/MIST (RAT, MALE) (OECD TEST GUIDELINE 403)
THE TEST ATMOSPHERE GENERATED IN THE ANIMAL STUDY IS NOT REPRESENTATIVE OF WORKPLACE ENVIRONMENTS, HOW THE SUBSTRANCE IS PLACED ON THE MARKET AND HOW IT CAN BE REASONABLY BE EXPECTED TO BE USED. THUS, THE TEST RESULT CANNOT BE DIRECTLY APPLIED FOR THE PURPOSE OF ASSESSING HAZARD. BASED ON EXPERT JUDGEMENT AND WEIGHT OF THE EVIDENCE, A MODIFIED CLASSIFICATION FOR ACUTE INHALATION TOXICITY IS JUSTIFIED

Acute Dermal Toxicity
LD50: >9,400 mg/kg (RABBIT, MALE/FEMALE) (OECD TEST GUIDELINE 402)
STUDIES OF A COMPARABLE PRODUCT

Skin Irritation
RABBIT, DRAIZE TEST, SLIGHTLY IRRITATING
HUMAN, IRRITATING

Eye Irritation
RABBIT, DRAIZE, MODERATELY IRRITATING
HUMAN, IRRITATING

Sensitization
SKIN SENSITIZATIO (LOCAL LYMPH NODE ASSAY (LLNA)): POSITIVE (MOUSE, OECD TEST GUIDELINE 429)
RESPIRATORY SENSITIZATION POSITIVE (GUINEA PIG)

Repeated Dose Toxicity
90 DAYS, INHALATION: NOAEL: 0.3 mg/m3 (RAT, MALE/FEMALE, 18 HRS/DAY, 5 DAYS/WEEK)
IRRITATION TO LUNGS AND NASAL CAVITY
HUMAN: IRRITATION TO LUNDS AND NASAL CAVITY

Mutagenicity
GENETIC TOXICITY IN VITRO:
AMES: (SALMONELLA TYPHIMURIUM, METABOLIC ACTIVATION: WITH/WITHOUT)
POSITIVE AND NEGATIVE RESULTS WERE REPORTED. THE USE OF CERTAIN SOLVENTS WHICH RAPIDLY HYDROLYZE DIISOCYANATES IS SUSPECTED OF PRODUCING THE POSITIVE MUTAGENICITY RESULTS

GENETIC TOXICITY IN VIVO:
MICRONUCLEUS ASSAY: (MOUSE) – NEGATIVE
MICRONUCLEUS TEST: NEGATIVE (RAT, MALE, INHALATIVE (EXPOSURE PERIOD: 3 X 1 HR/DAY OVER 3 WEEKS) – NEGATIVE

Carcinogenicity
RAT, FEMALE, INHALATION, 2 YEARS, 17 HRS/DAY, 5 DAYS/WEEK – NEGATIVE

Other Relevant Toxicity Information
MAY CAUSE IRRITATION OF RESPIRATORY TRACT

Toxicity Data for Diphenylmethane Diisocyanate (MDI) Mixed Isomers
SEE DATA ABOVE FOR POLYMERIC MDI

Carcinogenicity
NO CARCINOGENIC SUBSTANCES AS DEFINED BY IARC, NTP AND/OR OSHA

SECTION 12. ECOLOGICAL INFORMATION

Ecological Data
ECOTOXICITY DATA IS BASED ON POLYMERIC MDI (MIXTURE OF MONOMERS AND HIGHER MOLECULAR WEIGHT OLIGOMERS)

Biodegradation
0%, EXPOSURE TIME: 28 DAYS (NOT DEGRADABLE)

Bioaccumulation
RAINBOW TROUT, EXPOSURE TIME: 112 DAYS, < 1 BCF
DOES NOT BIOACCUMULATE

Acute and Prolonged Toxicity in Fish
LC0: > 1,000 mg/l (ZEBRA FISH, 96 HOURS)

LC0: > 3,000 mg/l (ORANGE-RED KILLFISH, 96 HOURS)

Acute Toxicity to Aquatic Invertebrates
EC50: > 1,000 mg/l (WATER FLEA, 24 HOURS)

Toxicity to Aquatic Plants
NOEC: 1,640 mg/l, END POINT: GROWTH (GREEN ALGAE, 72 HOURS)

Toxicity to Microorganisms
EC50: > 100 mg/l (ACTIVATED SLUDGE, 3 HOURS)

Ecological Data for 4,4'-Diphenylmethane Diisocyanate (MDI)

Acute and Prolonged Toxicity to Fish
LC50: > 500 mg/l (ZEBRA FISH, 24 HOURS)

Acute Toxicity to Aquatic Invertebrates
EC50: > 500 mg/l (WATER FLEA, 24 HOURS)

Ecological Data for Diphenylmethane Diisocyanate (MDI) Mixed Isomers
SEE DATA ABOVE FOR POLYMERIC MDI

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal Method
WASTE DISPOSAL SHOULD BE IN ACCORDANCE WITH EXISTING FEDERAL, PROVINCIAL, STATE AND LOCAL ENVIRONMENTAL CONTROL LAWS
INCINERATION IS THE PREFERRED METHOD

Empty Container Precaution
EMPTY CONTAINERS RETAIN PRODUCT RESIDUE, OBSERVE ALL PRECAUTIONS FOR PRODUCT.
DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH BECAUSE HIGHLY TOXIC VAPOURS AND GASES ARE FORMED. DO NOT REUSE WITHOUT THOROUGH COMMERCIAL CLEANING AND RECONDITIONING. IF CONTAINER IS TO BE DISPOSED, ENSURE ALL PRODUCT RESIDUES ARE REMOVED PRIOR TO DISPOSAL

SECTION 14. TRANSPORT INFORMATION

Land Transport (TDG)
NON-REGULATED

Sea Transport (IMDG)
NON-REGULATED

Air Transport (ICAO/IATA)
NON-REGULATED

SECTION 15. REGULATORY INFORMATION

DSL Status
ALL COMPONENTS OF THIS PRODUCT ARE ON THE CANADIAN DSL

SECTION 16. OTHER INFORMATION

Date of Latest Revision
MAY 1, 2019, VERSION 1.0

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