SAFETY DATA SHEET

Quantum Technical Services Ltd.

Section 1. Product and Company Identification

Product Name	**ILLUSTRIUM™ M1172 DTM Resin**
Recommended Use	Protective Coating for Industrial Equipment
Manufacturer	Quantum Technical Services Ltd. (Dba Quantum Chemical) 15 Riel Drive St. Albert, AB, Canada T8N 3Z2 Tel: (780) 458-3355 (non-emergency phone number) Fax: (780) 458-2852 www.quantumchemical.com
Chemical Emergencies	For 24-Hour Emergency call Canutec at 613.996.6666

Section 2. Hazards Identification

2.1 GHS Classificatiion

This material is considered hazardous by OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Sensitizer	Category 1
Serious Eye Damage	Category 2
Skin Corrosive	Category 2
Chronic Aquatic Toxicity	Category 2
Acute Aquatic Toxicity	Category 3
Acute Toxicity, Oral	Category 4
Acute Toxicity, Dermal	Category 4

2.2 Label Elements:

Pictogram:

Signal Word: **DANGER**

Hazard Statements:

H302	Harmful if swallowed
H314	Causes severe skin burns and eye irritation
H317	May cause an allergic skin reaction.
H402	Harmful to Aquatic Life

H412	Harmful to aquatic life with long lasting effects.

Precautionary Statements:

P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash with plenty of soap and water thoroughly after handling.
P270	Do not eat, drink, or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P273	Avoid release to the environment

Response:

P370 + P378	In case of fire, use carbon dioxide, dry chemical, or foam to extinguish.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P301 + P311 + P331	IF SWALLOWED: Call a POISON CENTER/doctor. Do NOT induce vomiting.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/attention.

Storage:

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P235	Keep cool.

Disposal:

P501	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Section 3. Composition and Ingredient Information

Hazardous Ingredients	**%**	**T.L.V.**	**C.A.S. #**	**OSHA PEL**
Aspartic Acid , N,N'-(methylene-4,1-cyclohexanediyl)bis-1,1',4,4' -tetraethyl ester	60 - 80	N/D	136210-30-5	N/D
Actual concentration is withheld as a trade secret.				
Aliphatic Amine	10 - 30	N/D	Proprietary*	N/D
Actual concentration is withheld as a trade secret.				
*HMIRA RN 12166, Filing Date June 27, 2018				
Cyclohexanemethanamine, 1,3,3 -trimethyl-N-(2-methylpropylidene -5-[(2-methylpropylidene) amino]	1 – 5	N/D	54914-37-3	N/D
Actual concentration is withheld as a trade secret.				
Decanedioic Acid, bis(1,2,2,6,6-Pentamethyl – 4- piperdinyl) ester	0.5 – 1.5	10 mg/m3	41556-26-7	
Actual concentration is withheld as a trade secret.				
Poly(oxy-1,2-ethanediyl),.alpha.-				

[3-3-(2H-benzotriazol-2-yl)-5-(1 ,1-dimethylethyl)-4-hydroxy phenyl]-1-oxopropyl]-.omega. -[3[3-(2H-benzotriazol-2-yl)-5- (1,1-dimethylethyl)-4-hydroxy phenyl]-1-oxopropoxy]	0.5 – 1.5	N/D	104810-47-1	N/D

Actual concentration is withheld as a trade secret.

Poly(oxy-1,2-ethanediyl,.alpha.- [3-[3-(2H-benzotriazol-2-yl)-5-(1 ,1-dimethylethyl)-4hydroxyphenyl] -1-oxopropyl]-.omega.hydroxy	0.5 – 1.5	N/D	104810-48-2	N/D

Actual concentration is withheld as a trade secret.

Section 4. First Aid Measures

Eye Contact	Immedidately flush with plenty of water for at least 15 minutes, keeping eyelids open. If redness, itching, or a burning sensation develop, seek medical attention.
Skin Contact	If skin is damaged or wounded, treat with saturated gauze pads or compresses using a freshly made up ascorbic acid solution (10g in 100g of water). Immediately flush skin with plenty of soap and water. Remove contaminated clothing and wash clothing before reuse.
Inhalation	Move victim to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and seek medical attention.
Ingestion	**Do not induce vomiting**. Seek medical attention immediately.
Most Important symptoms/ Effects – acute or delayded	Eye Disease, skin disorders and allergies.

Section 5. Fire Fighting Measures

Suitable Extinguishing Media	Use carbon dioxide, foam, and dry chemical Use water spray to keep fire exposed containers cool.
Unsuitable Extinguishing Media	High volume water jet.
Unusual Fire and Explosion Hazards	Wear protective clothing and self-contained breathing apparatus to protect against potential toxic and irritating fumes.
Hazardous Combustion Products	Carbon dioxide and monoxide, oxides of Nitrogen, unidentified compounds.

Section 6. Accidental Release Measures

Leak/Spill	Evacuate all non-essential personnel. Eliminate all sources of ignition. Ventilate area. Utilize recommended protective clothing. Dike area to prevent spreading. Absorb with inert material. Collect material in open containers. Remove containers to a safe place and cover loosely.

Section 7. Handling and Storage

Handling Procedures	Do not breathe vapors or spray mist. Avoid contact with eyes or skin, Avoid contact with clothing. Use only with adequate ventilation and personal protection. Wash hands and face thoroughly after handling and before eating and drinking.
Storage Needs	Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of reach of children.
Incompatible Materials or Ignition sources:	Hazardous polymerization does not occur, Avoid strong oxidizing agents, acids, isocyanates.

Section 8. Exposure Controls and Personal Protection

Exposure Limits:

Decanedioic Acid, bis(1,2,2,6,6-Pentamethyl – 4- piperdinyl) ester	41556-26-7	ACGIH TLV	(TWA) 10 mg/m3

No other information on exposure limits available.

Protective Equipment	
Eye/Type	Chemical tight goggles; full face shield if possibility of splashing.
Respiratory/Type	Respiratory masks should be worn at all times in the case of inadequate ventilation. A NIOSH/MSHA approved respirator with an organic vapour cartridge is acceptable.
Gloves/Type	Use neoprene or rubber gloves.
Clothing/Type	Wear adequate protective coveralls and footwear.
Other/Type	Eyewash fountain. Emergency shower should be in close proximity.
Ventilation Requirements	Ventilate adequately. See complete details above under handling instructions.

Section 9. Physical and Chemical Properties

Physical State	Liquid.
Appearance	Clear
Odour	Slight.
Odour Threshold	Not Available
Specific Gravity	1.09 @ 20°C.
Flash Point	> 200 F > 93.3 C (estimated)
Vapor Pressure (mm Hg)	Not Determined
Vapor Density (Air=1)	Not Applicable
Evaporation Rate	Not Available
Boiling Point	Not Available
pH	Not Available
Solubility in Water	Insoluble in water @ 68° F (20°C).
Freezing Point (°C)	Not Available
Melting Point	Not Available
Percent Solids by Weight	100%
Percent Volatile (g/l)	0% by weight; 0% by volume.
VOC (g/l)	0% with water; 0% without water.
Viscosity	Not Available

Flammability (solid,gas)	Not Applicable
Upper/Lower explosion/ Flammability limit	Not Applicable
Partition coefficient (n-octanol/ Water)	Not Available
Auto-ignition Temperature	Not Available
Decomposition Temperature	Not Available

Section 10. Stability and Reactivity

Stability	Stable.
Conditions to Avoid	Excessive heat, open flame, sparks, and strong oxidizing agents. Protect from atmospheric moisture.
Incompatibility	Oxidizing agents/acids.
Reactivity Conditions	Product is stable; hazardous polymerization will not occur.
Hazardous Products of Decomposition	By fire: carbon monoxide, carbon dioxide. Nitrogen oxides. amines. ammonia, aliphatic fragments.
Conditions to Avoid	Avoid incompatible reactants, especially strong bases, water or temperatures over 160°C.

Section 11. Toxicological Information

Likely routes of exposure:

Effects on Eye	Causes eye irritation
Effects on Skin	Causes skin irritation
Inhalation Effects	This product presents an elevated inhalation risk when used in spray or aerosol applications.
Ingestion Effects	No Data Available
Symptoms	No Data Available

Toxicity:

No data for product itself, data given for components.

Aspartic Acid , N,N'-(methylene-4,1-cyclohexanediyl)bis-1,1',4,4' -tetraethyl ester **136210-30-5**

Acute Toxicity (Toxicity data is based on a similar Product)	LD50 (oral, rat) >2000 mg/kg (Directive 67/548/EEC, Annex V, B.1) LC50 (inhalation, rat) >4.224 mg/l 4 hr OECD Guideline 403 LD50 (dermal, rat) >2000 mg/kg (Directive 67/548/EEC, Annex V, B.3)	
Skin Irritation	OECD Test Guideline 404	Slight Irritant

Toxicological Studies of a Comparable Product:

Eye Irritation (Rabbit)	OECD Test Guideline 405	Slightly Irritating
Skin Sensitization (Guinea Pig)	OECD Test Guideline 406	Positive
Repeated Dose Toxicity (rat)	Subacute Oral Toxicity	NOAEL > 1,000 mg/kg

Mutagenicity (toxicological studies of a comparable product):
Genetic Toxicity in Vitro:
Chromosome aberration test: negative
Salmonella/microsome test (Ames test): No indication of mutagenic effects
Genetic Toxicity in Vivo:
Micronucleus Test: negative (mouse)

Developmental Toxicity/Teratogenicity (toxicological studies of a comparable product):
Rat, female, Oral NOAEL (Teratogenicity): 1,000 mg./kg, NOAEL (meternal): 1,000 mg./kg

Aliphatic Amine

Acute Toxicity	LD50 (oral, rat) .>500 <2000 mg/kg OECD Guideline 423 LD50 (dermal,) >5000 mg/kg (the product has not been tested . The statement is derived from the properties of individual components.)
Irritation/Corrosion	Skin (rabbit) non-irritant OECD Guideline 404 Eye (rabbit0 Slightly irritating OECD Guideline 405
Sensitization	Caused skin sensitization in animal studies (testing described bellow) Mouse Local Lymph Node Assay (LLNA) OECD Guideline 429 Result: Sensitizing
Aspiration Hazard	No Aspiration hazard expected.

Cyclohexanemethanamine, 1,3,3 -trimethyl-N-(2-methylpropylidene -5-[(2-methylpropylidene) amino] 54914-37-3

Eye:	Slightly irritating to rabbit eye
Skin:	Rat Dermal LD50 >5000 mg/kg (ECHA) Corrosive to the rabbit skin
Inhalation:	No data were available for acute inhalation toxicity.
Ingestion:	Rat Oral LD50 4150 mg/kg (ECHA)
Sensitization:	The allergic skin reactions observed in all experimental animals

Decanedioic Acid, bis(1,2,2,6,6- Pentamethyl – 4- piperdinyl) ester 41556-26-7

Acute Toxicity	LD50 (oral, rat) >5000 mg/kg
Skin Irritation	Rabbit, non irritant
Eye Irritation	Rabbit, non irritant
Acute Skin Sensitization	Guinea Pig, Sienstizer

Poly(oxy-1,2-ethanediyl),.alpha.-[3-3-(2H-benzotriazol-2-yl)-5-(1 ,1-dimethylethyl)-4-hydroxy phenyl]-1-oxopropyl]-.omega. -[3[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxy phenyl]-1-oxopropoxy] 104810-47-1

**Poly(oxy-1,2-ethanediyl,.alpha.-
[3-[3-(2H-benzotriazol-2-yl)-5-(1
,1-dimethylethyl)-4hydroxyphenyl]
-1-oxopropyl]-.omega.hydroxy 104810-48-2**

(Data for Above 2 Ingredients in 50/50 blend)

Acute Toxicity	LD50 (oral, rat) >5000 mg/kg
Skin Irritation	Rabbit, non irritant
Eye Irritation	Rabbit, non irritant
Acute Skin Sensitization	Guinea Pig, Sienstizer

Delayed and immediate effects and Chronic Effects from Short and Long Term Exposure:

This product contains no listed carcinogens according to IARC, ACGIH, NTP and/or OSHA in concentrations of 0.1 percent or greater. May cause allergic skin reaction. Eye disease., Skin disorders and Allergies

Section 12. Ecological Information

No data for product itself, data given for components.

**Aspartic Acid , N,N'-(methylene-
4,1-cyclohexanediyl)bis-1,1',4,4'
-tetraethyl ester 136210-30-5**

Toxicity to Aquatic Plants	IC50 (scenedesmus subspicatus, 72 h)	113 mg/l

Ecotoxicological reports on a comparable product

Aliphatic Amine

No environmental data has been established or is available for this product.

**Cyclohexanemethanamine, 1,3,3
-trimethyl-N-(2-methylpropylidene
-5-[(2-methylpropylidene) amino] 54914-37-3**

Toxicity	LC50 (Zebra Fish (Danio rerio) 96 hr,)	>100 mg/l
	EC50 (Water Flea (Daphnia magna) 48 hr)	22.2 mg/l
	EC50 (Green Algae (Desmodesmus subspicatus) 72 hr)	73.6 mg/l (ECHA)
Biodegradation	Not Readily Biodegradable (< 60% after 28 days)	
Bioaccumulation	High potential to bioaccumulate (Log Kow = 5.2)	

**Decanedioic Acid, bis(1,2,2,6,6-
Pentamethyl – 4- piperdinyl) ester 41556-26-7**

Toxicity	LC50 (Zebra Fish (Danio rerio) 96 hr,)	0.97 mg/l

Poly(oxy-1,2-ethanediyl),.alpha.-[3-3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropyl]-.omega.-[3[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropoxy] **104810-47-1**

Poly(oxy-1,2-ethanediyl,.alpha.-[3-[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4hydroxyphenyl]-1-oxopropyl]-.omega.hydroxy **104810-48-2**

(Data for Above 2 Ingredients in 50/50 blend)

Toxicity	LC50 (Zebra Fish (Danio rerio) 96 hr,)	2.8 mg/l

Section 13. Disposal Considerations

Waste Disposal	Spilled material and water rinses are classified as chemical waste and must be disposed of in accordance with current local, municipal, provincial and federal regulations. Do not heat or cut empty containers with electric or gas torch.

Section 14. Transport Information

Proper Shipping Name	Polyaspartic Polyurea.
Hazard Class:	Non-regulated.

Section 15. Regulatory Information

Inventories	Canadian DSL	Aliphatic Amine is **not** listed on the DSL All other components listed

Section 16. Other Information

Revision Date:	June 26, 2018
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