STAPA IL HYDROLAN 214 55900/G Aluminium Paste

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SECTION 1. IDENTIFICATION

Product name : STAPA IL HYDROLAN 214 55900/G Aluminium Paste
Product code : 005367GD0

Manufacturer or supplier's details

Company name of supplier : ECKART America Corporation
Address : 830 East Erie Street
Painesville OH 44077
Telephone : 866-458-7837
(440) 954-7600
Telefax : (440) 354-6224
e-mail adresse : info.eckart.america.oh@altana.com
Emergency telephone : **CHEMTREC**: 800-424-9300
CHEMTREC: 1-703-527-3387 (International)

NCEC:
(contract no. ECKART29003-NCEC)
US: +1 866 928 0789 (Toll free)
Canada: +1 800 579 7421 (Toll Free)
Mexico: +52 55 5004 8763

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable solids : Category 1

Eye irritation : Category 2A

Specific target organ toxicity - single exposure : Category 3 (Central nervous system)

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H228 Flammable solid.
H319 Causes serious eye irritation.

H336 May cause drowsiness or dizziness.

Precautionary Statements :

Prevention:

P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P261	Avoid breathing dust.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ eye protection/ face protection.

Response:

P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
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.
P370 + P378	In case of fire: Use for extinction: Special powder for metal fires.
P370 + P378	In case of fire: Use for extinction: Dry sand.

Storage:

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal:

P501	Dispose of contents/ container to an approved waste disposal plant.

Hazardous ingredients which must be listed on the label:
2-Propanol
Solvent naphtha (petroleum), light arom.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Aluminum	7429-90-5	>= 50 - < 70
2-Propanol	67-63-0	>= 20 - < 30
Ethanol	64-17-5	>= 5 - < 10
Silica	7631-86-9	>= 1 - < 5
Naphtha (petroleum), hydrotreated heavy	64742-48-9	>= 1 - < 5
Solvent naphtha (petroleum), light arom.	64742-95-6	>= 1 - < 5
1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-	1760-24-3	>= 0.1 - < 1

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : Take the victim into fresh air.
Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.

If inhaled : Consult a physician after significant exposure.
If unconscious, place in recovery position and seek medical advice.

In case of skin contact : Wash off immediately with soap and plenty of water.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Keep eye wide open while rinsing.

If swallowed : Keep respiratory tract clear.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed : Causes serious eye irritation.
May cause drowsiness or dizziness.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Dry sand
Special powder against metal fire

Unsuitable extinguishing media : Water
Foam

		Carbon dioxide (CO2) ABC powder
Specific hazards during fire fighting	:	Contact with water liberates extremely flammable gas (hydrogen).
Further information	:	Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for fire-fighters	:	Use personal protective equipment. Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Evacuate personnel to safe areas. Use personal protective equipment. Use personal protective equipment. Avoid dust formation. Remove all sources of ignition.
Environmental precautions	:	The product should not be allowed to enter drains, water courses or the soil. Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Use mechanical handling equipment. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Do not flush with water. Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Earthing of containers and apparatuses is essential. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment. Avoid dust formation. Keep away from open flames, hot surfaces and sources of

ignition.

Advice on safe handling	:	Keep away from heat and sources of ignition. Avoid dust formation. Ensure adequate ventilation. Avoid formation of respirable particles. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage	:	Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Keep container closed when not in use. Keep away from sources of ignition - No smoking. No smoking. Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.
Technical measures/Precautions	:	Protect from humidity and water. Do not allow to dry.
Materials to avoid	:	Do not store together with oxidizing and self-igniting products. Never allow product to get in contact with water during storage. Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.
Further information on storage stability	:	No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Aluminum	7429-90-5	TWA (total dust)	50 Million particles per cubic foot	OSHA Z-3

		TWA (Respirable)	5 mg/m3	NIOSH REL
		TWA (total dust)	15 mg/m3	OSHA Z-3
		TWA (total)	10 mg/m3	NIOSH REL
		TWA (respirable fraction)	5 mg/m3	OSHA Z-3
		TWA (respirable fraction)	15 Million particles per cubic foot	OSHA Z-3
		TWA (Respirable particulate matter)	1 mg/m3	ACGIH
		TWA	5 mg/m3 (Aluminum)	NIOSH REL
		TWA (Total)	15 mg/m3 (Aluminum)	OSHA P0
		TWA (Respirable fraction)	5 mg/m3 (Aluminum)	OSHA P0
		TWA (total dust)	15 mg/m3 (Aluminum)	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3 (Aluminum)	OSHA Z-1
		TWA (Total dust)	15 mg/m3 (Aluminum)	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3 (Aluminum)	OSHA P0
		TWA (welding fumes)	5 mg/m3 (Aluminum)	NIOSH REL
		TWA (pyro powders)	5 mg/m3 (Aluminum)	NIOSH REL
		TWA (Respirable particulate matter)	1 mg/m3 (Aluminum)	ACGIH
		TWA (Fumes)	5 mg/m3	OSHA P0
		TWA	5 mg/m3	OSHA P0

		(powder)	(Aluminum)	
2-Propanol	67-63-0	TWA	200 ppm	ACGIH
		STEL	400 ppm	ACGIH
		TWA	400 ppm 980 mg/m3	NIOSH REL
		ST	500 ppm 1,225 mg/m3	NIOSH REL
		TWA	400 ppm 980 mg/m3	OSHA Z-1
		TWA	400 ppm 980 mg/m3	OSHA P0
		STEL	500 ppm 1,225 mg/m3	OSHA P0
Ethanol	64-17-5	TWA	1,000 ppm	ACGIH
		TWA	1,000 ppm 1,900 mg/m3	NIOSH REL
		TWA	1,000 ppm 1,900 mg/m3	OSHA Z-1
		TWA	1,000 ppm 1,900 mg/m3	OSHA P0
		STEL	1,000 ppm	ACGIH
Silica	7631-86-9	TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3
		TWA (Dust)	80 mg/m3 / %SiO2 (Silica)	OSHA Z-3
		TWA	6 mg/m3 (Silica)	NIOSH REL
Naphtha (petroleum), hydrotreated heavy	64742-48-9	TWA	500 ppm 2,000 mg/m3	OSHA Z-1
		TWA	400 ppm 1,600 mg/m3	OSHA P0
Solvent naphtha (petroleum), light arom.	64742-95-6	TWA	500 ppm 2,000 mg/m3	OSHA Z-1
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
		TWA	400 ppm 1,600 mg/m3	OSHA P0

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
2-Propanol	67-63-0	Acetone	Urine	End of shift at end of workweek	40 mg/l	ACGIH BEI

Personal protective equipment

Respiratory protection : Use suitable breathing protection if workplace concentration requires.
In the case of dust or aerosol formation use respirator with an approved filter.

Hand protection
Material : Solvent-resistant gloves (butyl-rubber)

Remarks : Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). The exact break through time can be obtained from the protective glove producer and this has to be observed. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
Recommended preventive skin protection Skin should be washed after contact. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Long sleeved clothing
Safety shoes
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Pasty solid
Color	:	silver
Odor	:	solvent
Odor Threshold	:	No data available
pH	:	substance/mixture is non-soluble (in water)
Melting point/freezing point	:	No data available
Boiling point/boiling range	:	82 - 83 °C
Flash point	:	13 °C
Evaporation rate	:	No data available
Flammability (solid, gas)	:	The substance or mixture is a flammable solid with the category 1.
Auto-flammability	:	not auto-flammable
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative density	:	No data available
Density	:	1.3 - 2.0 g/cm3
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity	:	No data available
Explosive properties	:	Not explosive Vapors may form explosive mixture with air.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	Reacts with alkalis, acids, halogenes and oxidizing agents. Contact with acids and alkalis may release hydrogen. Mixture reacts slowly with water resulting in evolution of hydrogen. Vapors may form explosive mixture with air. Stable under recommended storage conditions.

Conditions to avoid	:	Do not allow to dry. Heat, flames and sparks.
Incompatible materials	:	Acids Bases Oxidizing agents Highly halogenated compounds

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified based on available information.

Components:

2-Propanol:

Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg

Ethanol:

Acute oral toxicity	:	LD50 (Rat, male and female): 10,470 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	:	LC50 (Rat, male and female): 124.7 mg/l Exposure time: 4 h Test atmosphere: vapor Method: OECD Test Guideline 403

Silica:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg (Mouse): 15,000 mg/kg
Acute inhalation toxicity	:	(Rat): 0.139 mg/l Exposure time: 4 h
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg

Naphtha (petroleum), hydrotreated heavy:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): Test atmosphere: vapor Remarks: An LC50/inhalation/4h/rat could not be determined

because no mortality of rats was observed at the maximum achievable concentration.

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Solvent naphtha (petroleum), light arom.:

Acute oral toxicity : LD50 (Rat): 3,492 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg

1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-:

Acute oral toxicity : LD50 (Rat): ca. 2,995 mg/kg

Acute inhalation toxicity : LC50: 1.49 - 2.44 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Assessment: The component/mixture is moderately toxic after short term inhalation.

Skin corrosion/irritation

Not classified based on available information.

Components:

Ethanol:

Result: No skin irritation
Remarks: Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

2-Propanol:

Result: Eye irritation

Ethanol:

Result: Eye irritation
Remarks: Based on available data, the classification criteria are not met.

1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-:
Result: Corrosive

Respiratory or skin sensitization

Skin sensitization
Not classified based on available information.

Respiratory sensitization
Not classified based on available information.

Components:

1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-:
Result: May cause sensitization by skin contact.

Germ cell mutagenicity
Not classified based on available information.

Components:

Naphtha (petroleum), hydrotreated heavy:

Germ cell mutagenicity - Assessment	:	Classified based on benzene content < 0.1% (Regulation (EC) 1272/2008, Annex VI, Part 3, Note P)

Solvent naphtha (petroleum), light arom.:

Germ cell mutagenicity - Assessment	:	Classified based on benzene content < 0.1% (Regulation (EC) 1272/2008, Annex VI, Part 3, Note P)

Carcinogenicity
Not classified based on available information.

Components:

Naphtha (petroleum), hydrotreated heavy:

Carcinogenicity - Assessment	:	Classified based on benzene content < 0.1% (Regulation (EC) 1272/2008, Annex VI, Part 3, Note P)

Solvent naphtha (petroleum), light arom.:

Carcinogenicity - Assessment	:	Classified based on benzene content < 0.1% (Regulation (EC) 1272/2008, Annex VI, Part 3, Note P)

IARC	Group 1: Carcinogenic to humans

	Ethanol	64-17-5

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 ingredient 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
Not classified based on available information.

STOT-single exposure
May cause drowsiness or dizziness.

Components:

2-Propanol:
Assessment: May cause drowsiness or dizziness.

Solvent naphtha (petroleum), light arom.:
Assessment: May cause respiratory irritation., May cause drowsiness or dizziness.

STOT-repeated exposure
Not classified based on available information.

Aspiration toxicity
Not classified based on available information.

Components:

Naphtha (petroleum), hydrotreated heavy:
May be fatal if swallowed and enters airways.

Solvent naphtha (petroleum), light arom.:
May be fatal if swallowed and enters airways.

Further information

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Silica:

Toxicity to daphnia and other aquatic invertebrates	:	(Daphnia): 7,600 mg/l
Toxicity to algae	:	(Chlorella pyrenoidosa): 440 mg/l

Solvent naphtha (petroleum), light arom.:

Ecotoxicology Assessment

Chronic aquatic toxicity	:	Toxic to aquatic life with long lasting effects.

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Other adverse effects

No data available

Components:

Silica:

Additional ecological information	:	No data available

Naphtha (petroleum), hydrotreated heavy:

Additional ecological information	:	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company. In accordance with local and national regulations.
Contaminated packaging	:	Empty remaining contents.

Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.
In accordance with local and national regulations.

SECTION 14. TRANSPORT INFORMATION

Domestic regulation

49 CFR

UN/ID/NA number	:	UN 1325
Proper shipping name	:	Flammable solids, organic, n.o.s. (Aluminum pigment paste)
Class	:	4.1
Packing group	:	II
Labels	:	FLAMMABLE SOLID
ERG Code	:	133
Marine pollutant	:	no

International Regulations

IATA-DGR

UN/ID No.	:	UN 1325
Proper shipping name	:	Flammable solid, organic, n.o.s. (Aluminium pigment paste)
Class	:	4.1
Packing group	:	II
Labels	:	Flammable Solid
Packing instruction (cargo aircraft)	:	448
Packing instruction (passenger aircraft)	:	445

IMDG-Code

UN number	:	UN 1325
Proper shipping name	:	FLAMMABLE SOLID, ORGANIC, N.O.S. (Aluminium pigment paste)
Class	:	4.1
Packing group	:	II
Labels	:	4.1
EmS Code	:	F-G S-G
Marine pollutant	:	no
Remarks	:	IMDG Code segregation group 15 - Powdered metals

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Serious eye damage or eye irritation
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:

Aluminum	7429-90-5	>= 50 - < 70 %
2-Propanol	67-63-0	>= 20 - < 30 %

Clean Air Act

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).
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

2-Propanol	67-63-0	%
Ethanol	64-17-5	%

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307
This product does not contain any priority pollutants related to the U.S. Clean Water Act

US State Regulations

Massachusetts Right To Know

Aluminum	7429-90-5
2-Propanol	67-63-0
Ethanol	64-17-5
Silica	7631-86-9

Pennsylvania Right To Know

Aluminum	7429-90-5
2-Propanol	67-63-0
Ethanol	64-17-5
Silica	7631-86-9
Naphtha (petroleum), hydrotreated heavy	64742-48-9
Solvent naphtha (petroleum), light arom.	64742-95-6

California Prop. 65

WARNING: This product can expose you to chemicals including lead and cadmium, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

WARNING: This product can expose you to chemicals including Ethanol, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances

Aluminum	7429-90-5
2-Propanol	67-63-0
Ethanol	64-17-5

Silica	7631-86-9

California Permissible Exposure Limits for Chemical Contaminants

Aluminum	7429-90-5
2-Propanol	67-63-0
Ethanol	64-17-5
Silica	7631-86-9

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

DSL	:	All components of this product are on the Canadian DSL
TSCA	:	All chemical substances in this product are either listed as active on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

TSCA list

No substances are subject to a Significant New Use Rule.

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

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-3	:	USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded

at any time during a workday

OSHA P0 / TWA : 8-hour time weighted average
OSHA P0 / STEL : Short-term exposure limit
OSHA Z-1 / TWA : 8-hour time weighted average
OSHA Z-3 / TWA : 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 09/05/2023

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific

material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8