

Crude MCHM

Version	Revision Date:	SDS Number:	Date of last issue: 09/15/2016
3.3	06/04/2019	150000014291	Date of first issue: 09/06/2016
PRD		SDSUS / Z8 / 0001	

H361d Suspected of damaging the unborn child.

Precautionary Statements :

Prevention:

P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
 P264 Wash skin thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P280 Wear protective gloves/ eye protection/ face protection.
 P272 Contaminated work clothing should not be allowed out of the workplace.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
 P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
 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.
 P307 + P311 IF exposed: Call a POISON CENTER or doctor/ physician.
 P362 Take off contaminated clothing and wash before reuse.

Storage:

P405 Store locked up.

Disposal:

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

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**Components**

Chemical name	CAS-No.	Concentration (% w/w)
4-methylcyclohexanemethanol	34885-03-5	60 - 89
4-(methoxymethyl)cyclohexanemethanol	98955-27-2	1 - 22
Water	7732-18-5	4 - 11
methyl 4-methylcyclohexanecarboxylate	51181-40-9	5
dimethyl 1,4-cyclohexanedicarboxylate	94-60-0	1
methanol	67-56-1	1
1,4-cyclohexanedimethanol	105-08-8	1 - 2

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SECTION 4. FIRST AID MEASURES

- If inhaled : Treat symptomatically.
Remove to fresh air.
Get medical attention if symptoms occur.
- In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes.
Take off contaminated clothing and shoes immediately.
Get medical advice/ attention.
- In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
Get medical advice/ attention.
- If swallowed : Seek medical advice.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed.
Causes skin irritation.
Causes serious eye irritation.
Suspected of damaging the unborn child.
- Notes to physician : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray
Dry chemical
Carbon dioxide (CO₂)
Foam
- Unsuitable extinguishing media : None known.
- Hazardous combustion products : No hazardous combustion products are known
- Further information : None known.
- Special protective equipment for fire-fighters : 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 : Use personal protective equipment.
Local authorities should be advised if significant spillages cannot be contained.
- Environmental precautions : Avoid release to the environment.
- Methods and materials for containment and cleaning up : Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite)

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and transfer to a container for disposal according to local / national regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : None known.
- Advice on safe handling : Avoid contact with skin, eyes and clothing.
Do not taste or swallow.
Use only with adequate ventilation.
Wash thoroughly after handling.
- Conditions for safe storage : Keep container tightly closed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Ingredients with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m ³	NIOSH REL
		ST	250 ppm 325 mg/m ³	NIOSH REL
		TWA	200 ppm 260 mg/m ³	OSHA Z-1
		STEL	250 ppm 325 mg/m ³	OSHA P0
		TWA	200 ppm 260 mg/m ³	OSHA P0

- Engineering measures** : Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment

- Respiratory protection : Wear respiratory protection.

Hand protection

- Remarks : Wear suitable gloves.

- Eye protection : Safety glasses

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Protective measures : Wear suitable protective equipment.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : colorless

Odor : alcohol, licorice

Odor Threshold : 0.15 ppb

pH : not determined

Melting point/freezing point : 32 °F / 0 °C

Boiling point/boiling range : 356 °F / 180 °C

Flash point : 235.0 °F / 112.8 °C

Method: Seta closed cup

Evaporation rate : not determined

Upper explosion limit / Upper flammability limit : not determined

Lower explosion limit / Lower flammability limit : not determined

Vapor pressure : 24 mbar (68 °F / 20 °C)

Relative vapor density : not determined

Relative density : < 1
(estimated)

Solubility(ies)
Water solubility : appreciable

Partition coefficient: n-octanol/water : No data available

Autoignition temperature : not determined

Decomposition temperature : Thermal stability not tested. Low stability hazard expected at normal operating temperatures.

Viscosity

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Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	not determined
Explosive properties	:	No data available
Oxidizing properties	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	None known.
Conditions to avoid	:	Incompatible materials
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	Carbon dioxide (CO ₂) Carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION**Acute toxicity**

Harmful if swallowed.

Product:

Acute oral toxicity	:	LD50 Oral (Rat): 825 mg/kg
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	LD50 Dermal (Rat): > 2,000 mg/kg

Components:**methanol:**

Acute oral toxicity	:	LD50 Oral (Rat): 5,600 mg/kg
Acute dermal toxicity	:	LD50 Dermal (Rabbit): 17,100 mg/kg

dimethyl 1,4-cyclohexanedicarboxylate:

Acute oral toxicity	:	LD50 Oral (Rat): > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 2.91 mg/l Exposure time: 6 h
Acute dermal toxicity	:	LD50 Dermal (Guinea pig): > 10 mg/kg

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Skin corrosion/irritation

Causes skin irritation.

Product:

Species : Rabbit
Exposure time : 4 h
Result : Moderate

Components:**4-methylcyclohexanemethanol:**

Species : Guinea pig
Exposure time : 24 h
Result : strong

methanol:

Species : Rabbit
Exposure time : 72 h
Result : none

dimethyl 1,4-cyclohexanedicarboxylate:

Species : Guinea pig
Exposure time : 24 h
Result : slight

1,4-cyclohexanedimethanol:

Species : Rabbit
Exposure time : 24 h
Result : none

Serious eye damage/eye irritation

Causes serious eye irritation.

Product:

Remarks : No data available

Components:**4-methylcyclohexanemethanol:**

Species : Rabbit
Result : Moderate

methanol:

Species : Rabbit
Result : slight to moderate

dimethyl 1,4-cyclohexanedicarboxylate:

Species : Rabbit
Result : slight

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Result: positive
Remarks: National Toxicology Program Study

1,4-cyclohexanedimethanol:

Genotoxicity in vitro : Test Type: Mutagenicity - Mammalian
Metabolic activation: +/- activation
Method: In vitro Mammalian Cell Gene Mutation Test
Result: negative

Test Type: Ames test
Result: negative
Remarks: National Toxicology Program Study

Genotoxicity in vivo : Species: Rat
Application Route: oral: gavage
Method: Mammalian Bone Marrow Chromosome Aberration Test
Result: negative

Carcinogenicity

Not classified based on available information.

Product:

Remarks : This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Carcinogenicity - Assessment : This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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

Suspected of damaging the unborn child.

Product:

Effects on fertility : Remarks: No data available

Components:**4-methylcyclohexanemethanol:**

Effects on fertility : General Toxicity Parent: NOEL: 50 mg/kg body weight
General Toxicity F1: NOEL: 200 mg/kg body weight
Method: OECD Test No. 414: Prenatal Developmental Toxicity Study
Remarks: National Toxicology Program Study

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Repeated dose toxicity**Product:**

Species : Rat
NOAEL : 2,000 mg/kg
Application Route : Dermal Study
Exposure time : 14 days

Components:**4-methylcyclohexanemethanol:**

Species : Rat
 : 100 mg/kg
Application Route : Oral Study
Exposure time : 28 days

dimethyl 1,4-cyclohexanedicarboxylate:

Species : Rat, male
 : >= 871 mg/kg
Application Route : Oral Study
Exposure time : 30 d
Remarks : Read-across from a similar material

Species : Rat, female
 : >= 894 mg/kg
Application Route : Oral Study
Exposure time : 30 d
Remarks : Read-across from a similar material

1,4-cyclohexanedimethanol:

Species : Rat, male
 : 479 mg/kg
Application Route : in drinking water
Exposure time : 90 d

Species : Rat, female
 : 754 mg/kg
Application Route : in drinking water
Exposure time : 90 h

Aspiration toxicity

Not classified based on available information.

Product:

No data available

Information on likely routes of exposure**Product:**

Inhalation : Remarks: None known.

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Skin contact : Remarks: Causes skin irritation.

Eye contact : Remarks: Causes serious eye irritation.

Ingestion : Remarks: Harmful if swallowed.

Further information**Product:**

Test Type : Human Birthweight Study

Remarks : No meaningful differences in birthweights.
West Virginia Department of Health & Human Resources,
Bureau for Public Health in conjunction with CDC and ATSDR

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 57.4 mg/l
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (daphnid): 98.1 mg/l
aquatic invertebrates Exposure time: 48 h

Components:**methanol:**

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 15,400 mg/l
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 10,000 mg/l
aquatic invertebrates Exposure time: 48 h

Toxicity to algae/aquatic : EC50 (Pseudokirchneriella subcapitata (algae)): 22,000 mg/l
plants Exposure time: 96 h

dimethyl 1,4-cyclohexanedicarboxylate:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 23 mg/l
Exposure time: 96 h
Remarks: Read-across from a similar material

Toxicity to daphnia and other : LC50 (Daphnia magna (Water flea)): > 100 mg/l
aquatic invertebrates Exposure time: 48 h
Remarks: Read-across from a similar material

Toxicity to algae/aquatic : EC50 (Chlorella pyrenoidosa): > 124.6 mg/l
plants Exposure time: 72 h

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NOEC: (Chlorella pyrenoidosa): > 124.6 mg/l
Exposure time: 72 h

1,4-cyclohexanedimethanol:

Toxicity to fish : LC50 (Fish): > 125.3 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Chlorella pyrenoidosa): > 122.9 mg/l
Exposure time: 72 h

NOEC: (Chlorella pyrenoidosa): >= 122.9 mg/l
Exposure time: 72 h

Toxicity to fish (Chronic toxicity) : NOEC (Fish): >= 125.3 mg/l

Persistence and degradability**Product:**

Biodegradability : Result: Inherently biodegradable.

Biochemical Oxygen Demand (BOD) : BOD-5:
70 mg/g
: BOD-20:
1,300 mg/g

Chemical Oxygen Demand (COD) : 2,450 mg/g

BOD/COD : BOD/COD: 2.8 %

Components:**methanol:**

Biodegradability : Concentration: 10 mg/l
Biodegradation: 95 %
Exposure time: 20 d

Biochemical Oxygen Demand (BOD) : BOD-5:
770 mg/g
Incubation time: 5 d

BOD-20:
1,260 mg/g
Incubation time: 20 d

Chemical Oxygen Demand : 1,410 mg/g

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(COD)

BOD/COD : BOD/COD: 54.6 %

ThOD : 1,500 mg/g

BOD/ThOD : 51.3 %

dimethyl 1,4-cyclohexanedicarboxylate:

Biodegradability : Biodegradation: 55 %
Exposure time: 28 d
Remarks: Not readily biodegradable.

1,4-cyclohexanedimethanol:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 99.2 %
Exposure time: 28 d
Method: Ready Biodegradability: DOC Die Away Test

Biochemical Oxygen Demand (BOD) : BOD-5:
25 mg/g

BOD-20:
1,400 mg/g

Chemical Oxygen Demand (COD) : 2,400 mg/g

Bioaccumulative potential**Components:****methanol:**

Partition coefficient: n-octanol/water : Pow: 0.17
log Pow: -0.77

dimethyl 1,4-cyclohexanedicarboxylate:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: 2.29

1,4-cyclohexanedimethanol:

Bioaccumulation : Bioconcentration factor (BCF): 4.45
Method: estimated

Partition coefficient: n-octanol/water : log Pow: 0.36 - 1.47 (77 °F / 25 °C)

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Mobility in soil**Components:****1,4-cyclohexanedimethanol:**

Distribution among environmental compartments : log Koc: 0.499 - 1.6
Method: QSAR model

Other adverse effects**Product:**

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).

Components:**1,4-cyclohexanedimethanol:**

Results of PBT and vPvB assessment : Not fulfilling vPvB (very persistent, very bioaccumulative) criteria.

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : Dispose of in accordance with local regulations.

SECTION 14. TRANSPORT INFORMATION**International Regulations****IATA-DGR**

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

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

Not applicable for product as supplied.

Domestic regulation**49 CFR**

Not regulated as a dangerous good

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SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

Components	CAS-No.	Component TPQ (lbs)
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SARA 311/312 Hazards : Acute Health Hazard

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

methanol	67-56-1	1 %
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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).

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

methanol	67-56-1	1 %
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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 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

methanol	67-56-1	>= 1 - < 5 %
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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

US State Regulations

Massachusetts Right To Know

methanol	67-56-1
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Pennsylvania Right To Know

4-methylcyclohexanemethanol	34885-03-5
4-(methoxymethyl)cyclohexanemethanol	98955-27-2
Water	7732-18-5
methyl 4-methylcyclohexanecarboxylate	51181-40-9
methanol	67-56-1

New Jersey Right To Know

4-methylcyclohexanemethanol	34885-03-5
4-(methoxymethyl)cyclohexanemethanol	98955-27-2
Water	7732-18-5
methyl 4-methylcyclohexanecarboxylate	51181-40-9
methanol	67-56-1
dimethyl 1,4-cyclohexanedicarboxylate	94-60-0
1,4-cyclohexanedimethanol	105-08-8

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

CH INV : On the inventory, or in compliance with the inventory

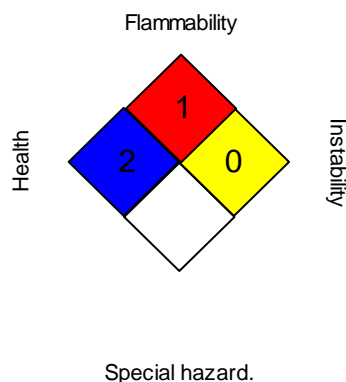
DSL : This product contains the following components listed on the Canadian NDSL. All other components are on the Canadian DSL.

TSCA : On TSCA Inventory

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**Further information****NFPA 704:****HMIS® IV:**

HEALTH		2
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

NIOSH REL : USA. NIOSH Recommended Exposure Limits

OSHA P0 : USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

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

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OSHA Z-1 / TWA : 8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; 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; 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 : 06/04/2019

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