SAFETY DATA SHEET

Chlorine

Version	Revision Date:	SDS Number:	Date of last issue: 01-26-2021
7.0	04-06-2021	10000001217	Date of first issue: 04-06-2021

Olin Corporation (OCAP) encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

SECTION 1. IDENTIFICATION

Product name : Chlorine

Manufacturer or supplier's details

Company name of supplier : Olin Corporation (OCAP)
Address : 190 Carondelet Plaza, Suite 1530
Clayton MO 63105
Telephone : (423) 336-4850
E-mail address : INFO@OLIN.COM
Local Emergency Contact : 1-800-424-9300
Identified uses : Water treatment chemicals
Pharmaceutical intermediate.
Pharmaceuticals.
Synthesis intermediate.
Disinfectants
Industrial biocidal product
Manufacture of plastics products

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Oxidizing gases : Category 1

Gases under pressure : Liquefied gas

Acute toxicity (Inhalation) : Category 2

Skin irritation : Category 2

Eye irritation : Category 2A

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

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : May cause or intensify fire; oxidizer.
Contains gas under pressure; may explode if heated.

Causes skin irritation.
Causes serious eye irritation.
Fatal if inhaled.
May cause respiratory irritation.

Precautionary Statements :

Prevention:

P220 Keep/Store away from clothing/ combustible materials.
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.
P284 In case of inadequate ventilation wear respiratory protection.
Avoid contact with:
Organic compounds.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P376 In case of fire: Stop leak if safe to do so.

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.

Other hazards

Water Reactive

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	:	Substance
Substance name	:	Chlorine
CAS-No.	:	7782-50-5
Synonyms	:	Chlorine

Components

Chemical name	CAS-No.	Concentration (% w/w)
Chlorine	7782-50-5	> 98 - < 100

SECTION 4. FIRST AID MEASURES

If inhaled	:	Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.
In case of skin contact	:	Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing. Seek medical attention if symptoms occur or irritation persists. Wash clothing before reuse. Suitable emergency safety shower facility should be immediately available.
In case of eye contact	:	- Wash eyes with plenty of water for 15 minutes at least. Do not forget to remove contact lenses. Suitable emergency eye wash facility should be immediately available.
If swallowed	:	No emergency medical treatment necessary.
Most important symptoms and effects, both acute and delayed	:	Aside from the information found under Description of first aid measures(above)any additional important symptoms and effects are described in Section 11: Toxicology Information.
Protection of first-aiders	:	First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	:	Maintain adequate ventilation and oxygenation of the patient. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. Material may cause severe pulmonary edema. For persons receiving significant exposure to this material, consider chest x-ray and keep under observation for 48 - 72 hr. for delayed onset of pulmonary edema. Humidified oxygen, intermittent positive pressure breathing, assisted respiration/CPAP and steroid therapy should be considered in treatment. Physical exertion may potentiate exposure effects during the first 24 - 72 hours. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Stop flow of oxidizer (ex. chlorine, oxygen, etc). Once oxidizer has been consumed, use suitable extinguishing agent for material that is burning.
Unsuitable extinguishing media	:	Water spray
Specific hazards during fire fighting	:	Container may vent and/or rupture due to fire. This material is a gaseous oxidizer. Product may cause many materials to burn in the absence of oxygen. It may intensify the fire. Chlorine may react to cause a fire and/or explosion upon contact with many organic compounds, ammonia, hydrogen, and many metals at normal temperatures, and with steel at elevated temperatures. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur.
Hazardous combustion products	:	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Chlorine. Hydrogen chloride.
Further information	:	Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Water is effective only as a cooling media to reduce the reaction rate and should not be applied directly to a chlorine leak. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. For spills of liquefied gas, apply appropriate foam or vapor suppressing agent. Warning! Contact of water with liquefied gas can result in boiling, frothing, and rapid generation of vapor. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the 'Accidental Release Measures' and the 'Ecological Information' sections of this (M)SDS.
Special protective equipment for fire-fighters	:	Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-

contained breathing apparatus and fight fire from a remote location.
For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Evacuate area. Refer to section 7, Handling, for additional precautionary measures. Only trained and properly protected personnel must be involved in clean-up operations. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. Spills of this liquefied gas may form ice, which can plug drains and can make valves inoperable. Contact of water with liquefied gas can result in boiling, frothing, and rapid generation of vapor. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Environmental precautions	:	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.
Methods and materials for containment and cleaning up	:	Isolate area until gas has dispersed. Stop flow of gas. Apply vapor suppression foams until spill can be cleaned up. See Section 13, Disposal Considerations, for additional information.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not breathe vapor. Do not get in eyes, on skin, on clothing. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Contents under pressure. Do not puncture or incinerate container. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Conditions for safe storage	:	Avoid moisture. Avoid contact with: Organic compounds.
Recommended storage temperature	:	572 °F / 300 °C

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type	Control parame-	Basis

		(Form of exposure)	ters / Permissible concentration	
Chlorine	7782-50-5	TWA	0.5 ppm	OLIN OEL
		STEL	1 ppm	OLIN OEL
		TWA	0.1 ppm	ACGIH
		STEL	0.4 ppm	ACGIH
		STEL	1 ppm 3 mg/m3	OSHA P0
		TWA	0.5 ppm 1.5 mg/m3	OSHA P0
		C	1 ppm 3 mg/m3	OSHA Z-1

Engineering measures : Use engineering controls to maintain airborne level below exposure limit requirements or guidelines.
If there are no applicable exposure limit requirements or guidelines, use only in enclosed systems or with local exhaust ventilation.
Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point.
Lethal concentrations may exist in areas with poor ventilation.

Personal protective equipment

Respiratory protection : Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines.
If there are no applicable exposure limit requirements or guidelines, use an approved respirator.
When respiratory protection is required, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.
For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.
In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

Hand protection

Remarks : Use gloves chemically resistant to this material. Use an insulated glove for protection from liquid contact of the skin that may cause frostbite due to rapid cooling. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Natural rubber ('latex'). Neoprene. Polyethylene. Ethyl vinyl alcohol laminate ('EVAL'). Polyvinyl chloride ('PVC' or 'vinyl'). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Nitrile/butadiene rubber ('nitrile' or 'NBR'). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as

well as the instructions/specifications provided by the glove supplier.

Eye protection : Use chemical goggles.
If exposure causes eye discomfort, use a full-face respirator.

Skin and body protection : Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquefied gas
Color	:	yellow
Odor	:	Sharp
pH	:	No test data available
Melting point/range	:	Not applicable
Freezing point		-150 °F / -101 °C Method: Literature
Boiling point/boiling range	:	-29.27 °F / -34.04 °C Method: Literature
Flash point	:	Method: open cup Not applicable Method: closed cup Not applicable
Evaporation rate	:	No test data available
Upper explosion limit / Upper flammability limit	:	Not applicable
Lower explosion limit / Lower flammability limit	:	Not applicable
Vapor pressure	:	4,800 mmHg (68 °F / 20 °C) Method: Literature
Relative vapor density	:	2.49 (32 °F / 0 °C) Method: Literature
Relative density	:	1.47 (32 °F / 0 °C) Method: Literature
Partition coefficient: n-octanol/water	:	No data available.
Autoignition temperature	:	No test data available
Decomposition temperature	:	No test data available
Viscosity		

Viscosity, kinematic	:	No test data available
Explosive properties	:	Not explosive
Oxidizing properties	:	May cause or intensify fire; oxidizer.
Molecular weight	:	70.9 g/mol Method: Literature

Note: These are the Reference Points for these Physical Properties listed above, unless otherwise noted in their respective Physical Property value information: Boiling Point at 760 mmHg; Evaporation Rate Butyl Acetate = 1; Relative Vapor Density Air = 1; and Relative Density Water = 1.
NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable.
Possibility of hazardous reactions	:	Polymerization will not occur.
Conditions to avoid	:	Avoid proximity to chemicals and flammable materials. Avoid moisture.
Incompatible materials	:	Contact with combustible material may cause fire. May react explosively with some organics under confinement. Avoid contact with: Ammonia. Acetylene. Combustible materials. Hydrogen. Organic compounds. Phosphorous compounds. Reducing agents. Corrosive when wet. Water contamination may cause corrosion of metals due to formation of hydrochloric acid. Avoid contact with metals such as: Moist or hot steel or their alloys. Most metals. Finely divided metals.
Hazardous decomposition products	:	Chlorine.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components:

Chlorine:

Acute oral toxicity	:	Remarks: Single dose oral LD50 has not been determined.
Acute inhalation toxicity	:	Remarks: Brief exposure (minutes) to easily attainable concentrations may cause serious adverse effects, even death. Vapor may cause severe irritation of the upper respiratory

tract (nose and throat).
May cause severe pulmonary edema (fluid in the lungs).
Excessive exposure may cause lung injury.
In humans, symptoms may include:
Dizziness.
Shortness of breath.
Headache.
Fever.
Drowsiness.

LC50 (Rat, male and female): 1.321 mg/l
Exposure time: 1 h
Test atmosphere: vapor

Acute dermal toxicity : Remarks: The dermal LD50 has not been determined.

Skin corrosion/irritation

Components:

Chlorine:

Result : Skin irritation
Remarks : Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.
Liquid may cause frostbite upon skin contact.

Serious eye damage/eye irritation

Components:

Chlorine:

Result : Eye irritation
Remarks : May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.
Vapor may cause severe eye irritation and corneal injury.

Respiratory or skin sensitization

Components:

Chlorine:

Assessment : Does not cause skin sensitization.
Remarks : Did not cause allergic skin reactions when tested in guinea pigs.

Assessment : Does not cause respiratory sensitization.
Remarks : No signs of respiratory sensitization have been reported.

Germ cell mutagenicity

Product:

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

Components:

Chlorine:

Genotoxicity in vitro : Remarks: Has been shown to have mutagenic activity in bacteria.
Animal genetic toxicity studies were negative.

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

Carcinogenicity

Product:

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

Components:

Chlorine:

Remarks : Did not cause cancer in laboratory animals.

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

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

Product:

Reproductive toxicity - Assessment : No toxicity to reproduction
No effects on or via lactation

Components:

Chlorine:

Effects on fertility : Remarks: In animal studies, did not interfere with reproduction.

Effects on fetal development : Remarks: Limited data suggests that chlorine is not teratogenic but may be slightly embryotoxic when administered at high doses in drinking water to pregnant rats.

Reproductive toxicity - Assessment : No toxicity to reproduction
No effects on or via lactation

STOT-single exposure

Components:

Chlorine:

Routes of exposure	:	Inhalation
Target Organs	:	Respiratory Tract
Assessment	:	May cause respiratory irritation.

Repeated dose toxicity

Components:

Chlorine:

Remarks	:	In humans, symptoms may include: Respiratory effects. In animals, effects have been reported on the following organs: Kidney. Liver. Lung. Observations in animals include: Can cause erosion of the teeth.

Aspiration toxicity

Components:

Chlorine:

Based on physical properties, not likely to be an aspiration hazard.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Chlorine:

Toxicity to fish	:	Remarks: Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species). LC50 (Oncorhynchus mykiss (rainbow trout)): 0.060 mg/l Exposure time: 96 h Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.141 mg/l Exposure time: 48 h Test Type: flow-through test Method: OECD Test Guideline 202 or Equivalent
Toxicity to algae/aquatic plants	:	NOEC (Algae): 0.0021 mg/l Exposure time: 7 d

Test Type: flow-through test

M-Factor (Acute aquatic toxicity)	:	100
Toxicity to fish (Chronic toxicity)	:	NOEC (Fish): 0.04 mg/l
M-Factor (Chronic aquatic toxicity)	:	100

Persistence and degradability

Components:

Chlorine:

Biodegradability	:	Remarks: Biodegradation is not applicable.
ThOD	:	0.23 mg/mg

Bioaccumulative potential

Components:

Chlorine:

Partition coefficient: n-octanol/water	:	Remarks: Partitioning from water to n-octanol is not applicable.

Mobility in soil

Components:

Chlorine:

Distribution among environmental compartments	:	Remarks: Mobility of chlorine in soil is assumed to be of little relevance as chlorine in an aqueous solution reacts with organic matter.

Other adverse effects

Components:

Chlorine:

Results of PBT and vPvB assessment	:	A PBT, vPvB assessment is not required for this substance as it is considered to be used as an intermediate under strictly controlled conditions.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED

CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information.
All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations.
Regulations may vary in different locations.
Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.
DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	:	UN 1017
Proper shipping name	:	CHLORINE
Class	:	2.3
Subsidiary risk	:	5.1, 8
Packing group	:	Not assigned by regulation
Labels	:	2.3 (5.1, 8)

IATA-DGR

Not permitted for transport

IMDG-Code

UN number	:	UN 1017
Proper shipping name	:	CHLORINE (Chlorine)
Class	:	2.3
Subsidiary risk	:	5.1, 8
Packing group	:	Not assigned by regulation
Labels	:	2.3 (5.1, 8)
EmS Code	:	F-C, S-U
Marine pollutant	:	yes
Remarks	:	Stowage category DToxic-Inhalation Hazard, Zone B

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

UN/ID/NA number	:	UN 1017
Proper shipping name	:	Chlorine
Class	:	2.3
Subsidiary risk	:	5.1, 8
Packing group	:	Not assigned by regulation
Labels	:	POISON GAS, OXIDIZER, CORROSIVE
ERG Code	:	124
Marine pollutant	:	yes(Chlorine)
Remarks	:	Toxic-Inhalation Hazard, Zone BTerrapure Env#+1800-567-7455

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data

Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

SARA 311/312 Hazards : Gases under pressure
Oxidizer (liquid, solid or gas)
Acute toxicity (any route of exposure)
Skin corrosion or irritation
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:

Chlorine	7782-50-5	> 98 - < 100 %

US State Regulations

Pennsylvania Right To Know

Chlorine	7782-50-5

California Prop. 65

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

International Regulations

Montreal Protocol (Ozone Depleting Substances)	:	Not applicable
Rotterdam Convention (Prior Informed Consent)	:	Not applicable
Stockholm Convention (Persistent Organic Pollutants)	:	Not applicable

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

CH INV	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
DSL	:	All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.
AICS	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
NZIoC	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
ENCS	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
ISHL	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
KECI	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
PICCS	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
IECSC	:	All intentional components are listed on the inventory, are

exempt, or are supplier certified.

TCSI : All intentional components are listed on the inventory, are exempt, or are supplier certified.

TSCA : All substances listed as active on the TSCA Inventory or are not required to be listed.

TSCA list

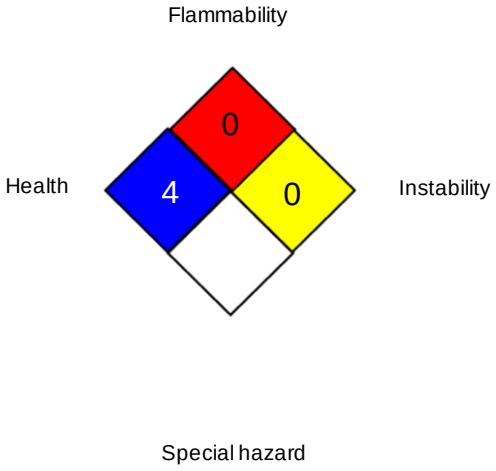
No substances are subject to a Significant New Use Rule.

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

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
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
OSHA P0 / TWA	:	8-hour time weighted average
OSHA P0 / STEL	:	Short-term exposure limit
OSHA Z-1 / C	:	Ceiling

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 : 04-06-2021

Olin Corporation (OCAP) urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given.Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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