

Safety Data Sheet Cyclohexanone

Version 1.1

Revision Date: 05/12/2015

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Cyclohexanone
Product Use Description : Solvent.

Manufacturer or supplier's details

Company : Nexeo Solutions LLC
Address : 3 Waterway Square Place Suite 1000
Woodlands, Tx. 77380
United States of America

Emergency telephone number:

Health North America: 1-855-NEXEO4U (1-855-639-3648)

Health International: 1-855-NEXEO4U (1-855-639-3648)

Transport North America: CHEMTREC 800.424.9300

Additional Information: : Responsible Party: Product Safety Group
E-Mail: msds@nexeosolutions.com
SDS Requests: 1-855-429-2661
SDS Requests Fax: 1-281-500-2370
Website: www.nexeosolutions.com

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 4

Acute toxicity (Inhalation) : Category 4

Acute toxicity (Dermal) : Category 3

Skin irritation : Category 2

Serious eye damage : Category 1

GHS Label element

Hazard pictograms :



Signal word : Danger

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- Hazard statements : H226 Flammable liquid and vapour.
H302 + H332 Harmful if swallowed or if inhaled
H311 Toxic in contact with skin.
H315+H318 Causes skin and serious eye irritation
- Precautionary statements : **Prevention:**
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.
- Response:**
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
- Storage:**
P403 + P235 Store in a well-ventilated place. Keep cool.
- Disposal:**
P501 Dispose of contents/ container to an approved waste disposal plant.

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Potential Health Effects

Carcinogenicity:

IARC

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

ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

OSHA

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Emergency Overview

WARNING!	
Appearance	liquid
Colour	clear, colourless
Odour	characteristic, acetone-like, mint-like
Hazard Summary	No information available.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Hazardous components

CAS-No.	Chemical Name	Concentration (%)
108-94-1	Cyclohexanone	90 - 100

Molecular formula : C₆H₁₀O

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attend-

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	ance. Do not leave the victim unattended.
If inhaled	: Consult a physician after significant exposure. If unconscious place in recovery position and seek medical advice.
In case of skin contact	: If on skin, rinse well with water. If on clothes, remove clothes. If skin irritation persists, call a physician.
In case of eye contact	: Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
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.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Alcohol-resistant foam Carbon dioxide (CO ₂) Dry chemical
Unsuitable extinguishing media	: High volume water jet
Specific hazards during firefighting	: Do not allow run-off from fire fighting to enter drains or water courses.
Specific extinguishing methods	: Use a water spray to cool fully closed containers.
Further information	: Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Special protective equipment for firefighters	: Wear self-contained breathing apparatus for firefighting if necessary.

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NFPA Flammable and Combustible Liquids Classification:
Combustible Liquid Class II

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Environmental precautions	: 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	: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	: Avoid formation of aerosol. Do not breathe vapours/dust. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage	: No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must com-

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ply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

CAS-No.	Components	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
108-94-1	Cyclohexanone	TWA	20 ppm	ACGIH
		STEL	50 ppm	ACGIH
		TWA	25 ppm 100 mg/m ³	NIOSH REL
		TWA	50 ppm 200 mg/m ³	OSHA Z-1
		TWA	25 ppm 100 mg/m ³	OSHA P0

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Cyclohexanone	108-94-1	1,2-Cyclohexanediol	In urine	End of shift at end of work-week	80 mg/l	ACGIH BEI
Remarks:	With hydrolyses					
		Cyclohexanol	In urine	End of shift (As soon as possible after exposure ceases)	8 mg/l	ACGIH BEI
Remarks:	With hydrolyses					

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.
In the case of vapour formation use a respirator with an approved filter.

Hand protection
Remarks : The suitability for a specific workplace should be dis-

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	cussed with the producers of the protective gloves.
Eye protection	: Eye wash bottle with pure water Tightly fitting safety goggles
Skin and body protection	: impervious clothing 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	: liquid
Colour	: clear, colourless
Odour	: characteristic, acetone-like, mint-like
Odour Threshold	: No data available
pH	: not applicable
Freezing Point (Melting point/freezing point)	: -47 - -31 °C (-53 - -24 °F)
Boiling Point (Boiling point/boiling range)	: 130 - 170 °C (266 - 338 °F) (1013.33 hPa)
Flash point	: 44 °C (111 °F)
Evaporation rate	: 0.3 n-Butyl Acetate
Flammability (solid, gas)	: No data available
Burning rate	: No data available
Upper explosion limit	: 9.4 - 12 %(V)
Lower explosion limit	: 1 %(V)
Vapour pressure	: 3.94 mmHg @ 20 °C (68 °F)

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Relative vapour density	: 3.4
Relative density	: 0.946 @ 20 °C (68 °F) Reference substance: (water = 1)
Density	: 0.95 g/cm ³ @ 20 °C (68 °F)
Bulk density	: 7.88 lb/gal
Solubility(ies)	
Water solubility	: 150 g/l slightly soluble
Solubility in other sol- vents	: No data available
Partition coefficient: n- octanol/water	: log Pow: 0.81
Auto-ignition temperature	: 420 °C
Thermal decomposition	: No data available
Viscosity	
Viscosity, kinematic	: 2 mm ² /s

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No dangerous reaction known under conditions of normal use.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No hazards to be specially mentioned.
Conditions to avoid	: Keep away from heat, flame, sparks and other ignition sources.
Incompatible materials	: Strong acids Strong bases Strong oxidizing agents Nitric acid Peroxides hydrogen peroxide
Hazardous decomposition products	: Nitrogen oxides (NO _x) Smoke

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Hydrocarbons
carbon dioxide and carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute dermal toxicity : LD50 (rabbit): 948 mg/kg
Assessment: The component/mixture is toxic after single contact with skin.

Components:

108-94-1:

Acute oral toxicity : LD50 (rat): 1,890 mg/kg
Method: Standard Acute
Assessment: The component/mixture is moderately toxic after single ingestion.

Acute inhalation toxicity : LC50 (rat): 15 mg/l
Test atmosphere: vapour
Assessment: The component/mixture is moderately toxic after short term inhalation.

Acute dermal toxicity : LD50 (rabbit): 946 mg/kg
Assessment: The component/mixture is toxic after single contact with skin.

Skin corrosion/irritation

Product:

Result: Irritating to skin.

Components:

108-94-1:

Species: rabbit
Exposure time: 4 h
Method: OECD Test Guideline 404
Result: Irritating to skin.
GLP: yes

Serious eye damage/eye irritation

Product:

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Result: Risk of serious damage to eyes.

Components:

108-94-1:

Species: rabbit

Result: Risk of serious damage to eyes.

Exposure time: 24 h

Method: In vivo

GLP: yes

Respiratory or skin sensitisation

Components:

108-94-1:

Test Type: Maximization test

Species: guinea pig

Method: In vivo

Result: Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Components:

108-94-1:

Genotoxicity in vitro : Test Type: Mammalian cell gene mutation assay
Test species: Chinese hamster ovary (CHO)
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Test species: rat (male and female)
Application Route: inhalation (vapour)
Exposure time: 7 h/d, 5d
Dose: 0, 50, 400 ppm
Result: negative

Germ cell mutagenicity-Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity

Components:

108-94-1:

Species: rat, (male and female)

Application Route: Oral

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Exposure time: 104 wks
Dose: 0, 3300, 6500 ppm
LOAEL: 3,300 ppm

Result: Limited evidence of carcinogenic effects
Symptoms: weight loss

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

Reproductive toxicity

Components:

108-94-1:

Effects on fertility : Test Type: Two-generation study
Species: rat, male and female
Application Route: Inhalation
Dose: 0, 250, 500, 1000 ppm
Duration of Single Treatment: 6 h
General Toxicity - Parent: NOAEC: 1,000 ppm
General Toxicity F1: NOAEC: 500 ppm
GLP: yes

Effects on foetal development : Species: rabbit
Application Route: Oral
Dose: 0, 50, 250, 500 mg/kg bw
Duration of Single Treatment: 13 d
General Toxicity Maternal: NOAEL: 250 mg/kg body weight
Teratogenicity: NOAEL: 500 mg/kg body weight
Symptoms: Maternal toxicity, Reduced body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects.
GLP: yes

Reproductive toxicity - Assessment : Fertility classification not possible from current data.
Did not show teratogenic effects in animal experiments.

STOT - single exposure

Product:No data available

Components:

108-94-1:No data available

STOT - repeated exposure

Product:No data available

Components:

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108-94-1: No data available

Repeated dose toxicity

Components:

108-94-1:

Species: rat, male and female

143 mg/kg

Application Route: Oral

Exposure time: 3 mths

Number of exposures: daily

Dose: 0, 40, 143, 407 mg/kg bw

Method: OECD Test Guideline 408

GLP: yes

Symptoms: weight loss

Repeated dose toxicity - Assessment : Harmful if swallowed., Harmful in contact with skin., Harmful if inhaled., Causes skin irritation., Causes serious eye damage.

Aspiration toxicity

Product:

No aspiration toxicity classification

Further information

Product:

Remarks: Solvents may degrease the skin.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

108-94-1:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 100 mg/l
Exposure time: 96 h
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

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Remarks: Information given is based on data obtained from similar substances.

Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 100 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes
Remarks: Information given is based on data obtained from similar substances.

Toxicity to bacteria : EC 50 (activated sludge): > 1,000 mg/l
End point: Respiratory rate
Exposure time: 30 min
Test Type: Static
Method: OECD Test Guideline 209
GLP:

Persistence and degradability

Product:

Biodegradability : Biodegradation: > 60 %
Remarks: Readily biodegradable

Components:

108-94-1:

Biodegradability : Inoculum: activated sludge
Concentration: 100 mg/l
Result: Readily biodegradable.
Biodegradation: 97 %
Exposure time: 28 d

Bioaccumulative potential

Components:

108-94-1:

Partition coefficient: n-octanol/water : log Pow: 0.81

Mobility in soil

No data available

Other adverse effects

No data available

Product:

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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).
Additional ecological information	: No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	: Dispose of in accordance with all applicable local, state and federal regulations. For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact NEXEO's Environmental Services Group at 800-637-7922.
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.

SECTION 14. TRANSPORT INFORMATION

IATA (International Air Transport Association): UN1915, CYCLOHEXANONE, 3, III, Flash Point: 44 °C (111 °F)

IMDG (International Maritime Dangerous Goods): UN1915, CYCLOHEXANONE, 3, III

DOT (Department of Transportation): UN1915, CYCLOHEXANONE, 3, III

SECTION 15. REGULATORY INFORMATION

OSHA Hazards	: Combustible Liquid, Harmful by ingestion., Moderate skin irritant, Corrosive to eyes
WHMIS Classification	: B3: Combustible Liquid D2A: Very Toxic Material Causing Other Toxic Effects

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D2B: Toxic Material Causing Other Toxic Effects

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Cyclohexanone	108-94-1	5000	5000

SARA 304 Extremely Hazardous Substances Reportable Quantity

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

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard

SARA 302 : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (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 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

108-94-1	Cyclohexanone	100 %
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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. Clean-Water 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

108-94-1	Cyclohexanone	90 - 100 %
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Pennsylvania Right To Know

108-94-1	Cyclohexanone	90 - 100 %
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New Jersey Right To Know

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108-94-1

Cyclohexanone

90 - 100 %

California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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

United States TSCA Inventory	:	y (positive listing) (On TSCA Inventory)
Canadian Domestic Substances List (DSL)	:	y (positive listing) (On the inventory, or in compliance with the inventory)
Australia Inventory of Chemical Substances (AICS)	:	y (positive listing) (On the inventory, or in compliance with the inventory)
New Zealand. Inventory of Chemical Substances	:	y (positive listing) (On the inventory, or in compliance with the inventory)
Japan. ENCS - Existing and New Chemical Substances Inventory	:	n (Negative listing) (Not in compliance with the inventory)
Korea. Korean Existing Chemicals Inventory (KECI)	:	n (Negative listing) (Not in compliance with the inventory)
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	:	y (positive listing) (On the inventory, or in compliance with the inventory)
China. Inventory of Existing Chemical Substances in China (IECSC)	:	y (positive listing) (On the inventory, or in compliance with the inventory)

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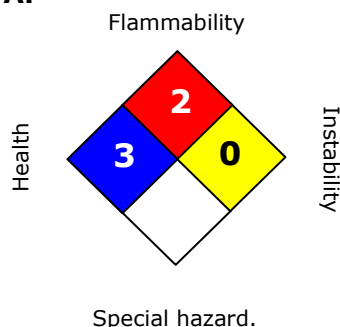
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SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	3
FLAMMABILITY	2
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

The information accumulated is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by NEXEO™ Solutions EHS Product Safety Department (1-855-429-2661) MSDS@nexeosolutions.com.

Legacy MSDS: R0000746

Material number:

16055963, 16055962, 16062071, 16055961, 16055960, 732046, 704071, 661359, 570065, 554381, 552623, 54100, 70850, 103609, 71461, 54306, 69373, 103328, 20158, 20153, 20157, 20155, 55078, 53680, 87839, 70677, 70847, 70566, 86419, 69093, 20154

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals

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EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50			Lethal Concentration 50%