

**Toluene Reference, Fuel Grade**

Version 1.6

Revision Date 2014-05-27

SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product information**

Trade name : Toluene Reference, Fuel Grade
Material : 1016965, 1016964, 1016968, 1016967, 1016963, 1016966

Use : Reference Fuel

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:**Health:**

866.442.9628 (North America)
1.832.813.4984 (International)

Transport:

North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255)
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : MSDS@CPChem.com
Website : www.CPChem.com

SECTION 2: Hazards identification**Classification of the substance or mixture**

This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Emergency Overview**Danger**

Form: Non-viscous **Physical state:** Liquid **Color:** Clear **Odor:** Strong gasoline

OSHA Hazards : Flammable Liquid, Reproductive hazard

Classification

: Flammable liquids, Category 2
Skin irritation, Category 2
Eye irritation, Category 2A
Reproductive toxicity, Category 2
Specific target organ systemic toxicity - repeated exposure,
Category 2, Auditory organs

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Aspiration hazard, Category 1

Labeling

Symbol(s)



Signal Word

: Danger

Hazard Statements

: H225: Highly flammable liquid and vapor.
 H304: May be fatal if swallowed and enters airways.
 H315: Causes skin irritation.
 H319: Causes serious eye irritation.
 H336: May cause drowsiness or dizziness.
 H361: Suspected of damaging fertility or the unborn child.
 H373: May cause damage to organs (Auditory organs) through prolonged or repeated exposure.

Precautionary Statements

: **Prevention:**
 P201: Obtain special instructions before use.
 P202: Do not handle until all safety precautions have been read and understood.
 P210: Keep away from heat/sparks/open flames/hot surfaces. - 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.
 P260: Do not breathe dust/fume/gas/mist/vapor/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.
 P281: Use personal protective equipment as required.
Response:
 P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
 P303 + P361 + P353: IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
 P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P308 + P313: IF exposed or concerned: Get medical advice/ attention.
 P331: Do NOT induce vomiting.
 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 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Storage:
 P403 + P233: Store in a well-ventilated place. Keep container

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tightly closed.
 P403 + P235: Store in a well-ventilated place. Keep cool.
 P405: Store locked up.
Disposal:
 P501: Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity:

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.

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.

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

SECTION 3: Composition/information on ingredients

Synonyms : Toluol
 Toluene (Reference Fuel)

Molecular formula : C₇H₈

Component	CAS-No.	Weight %
Toluene	108-88-3	99.95
Benzene	71-43-2	0.05

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

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

In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

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 induce vomiting. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

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SECTION 5: Firefighting measures

Flash point	:	4.4 °C (39.9 °F) Method: closed cup
Autoignition temperature	:	529 °C (984 °F)
Suitable extinguishing media	:	Alcohol-resistant foam. Carbon dioxide (CO ₂). Dry chemical.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Special protective equipment for fire-fighters	:	Wear self contained breathing apparatus for fire fighting if necessary.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. 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. Use a water spray to cool fully closed containers.
Fire and explosion protection	:	Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.
Hazardous decomposition products	:	Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors 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 for 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**Handling**

Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid

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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. 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.

Advice on protection against fire and explosion : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers : 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 comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection**Ingredients with workplace control parameters****US**

Ingredients	Basis	Value	Control parameters	Note
Toluene	ACGIH	TWA	20 ppm,	BEI, A4,
	OSHA Z-2	TWA	200 ppm,	
	OSHA Z-2	CEIL	300 ppm,	
	OSHA Z-2	Peak	500 ppm,	
	OSHA Z-1-A	TWA	100 ppm, 375 mg/m3	
Benzene	OSHA Z-1-A	STEL	150 ppm, 560 mg/m3	
	ACGIH	TWA	0.5 ppm,	BEI, A1, Skin,
	ACGIH	STEL	2.5 ppm,	BEI, A1, Skin,
	OSHA Z-1-A	TWA	1 ppm,	
	OSHA Z-1-A	CEIL	5 ppm,	
	OSHA Z-2	Peak	50 ppm,	(a),
	OSHA 29 CFR 1910.1028(c)	TWA	1 ppm,	
	OSHA 29 CFR 1910.1028(c)	STEL	5 ppm,	
	OSHA CARC	PEL	1 ppm,	
	OSHA CARC	STEL	5 ppm,	

(a) This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1028.

A1 Confirmed human carcinogen

A4 Not classifiable as a human carcinogen

BEI Substances for which there is a Biological Exposure Index or Indices (see BEI® section)

Skin Danger of cutaneous absorption

Immediately Dangerous to Life or Health Concentrations (IDLH)

Substance name	CAS-No.	Control parameters	Update
Toluene	108-88-3	Immediately Dangerous to Life or Health Concentration Value 500 parts per million	1995-03-01

Engineering measures

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits.

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Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

- Respiratory protection** : Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
- Hand protection** : The suitability for a specific workplace should be discussed with the producers of the protective gloves. 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. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
- Eye protection** : Eye wash bottle with pure water. Tightly fitting safety goggles.
- Skin and body protection** : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.
- 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**Information on basic physical and chemical properties****Appearance**

- Form** : Non-viscous
Physical state : Liquid
Color : Clear
Odor : Strong gasoline

Safety data

- Flash point** : 4.4 °C (39.9 °F)
 Method: closed cup
Lower explosion limit : 1.2 %(V)
Upper explosion limit : 7.1 %(V)

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Oxidizing properties	: no
Autoignition temperature	: 529 °C (984 °F)
Molecular formula	: C ₇ H ₈
Molecular weight	: 92.15 g/mol
pH	: Not applicable
pour point	: No data available
Freezing point	: -94.5 °C (-138.1 °F)
Boiling point/boiling range	: 110.6 °C (231.1 °F)
Vapor pressure	: 1.10 PSI at 37.8 °C (100.0 °F)
Relative density	: 0.87, 15.6 °C(60.1 °F)
Density	: 0.9 g/cm ³
Water solubility	: Soluble in alcohol, benzene, and ether; insoluble in water.
Partition coefficient: n-octanol/water	: No data available
Viscosity, kinematic	: No data available
Relative vapor density	: 2.8 (Air = 1.0)
Evaporation rate	: 4.5
Percent volatile	: > 99 %

Other information

Conductivity	: 8 pSm at 20 °C Method: ASTM D4308
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SECTION 10: Stability and reactivity

Chemical stability	: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
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Possibility of hazardous reactions

Conditions to avoid	: Heat, flames and sparks.
Materials to avoid	: May react with oxygen and strong oxidizing agents, such as

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chlorates, nitrates, peroxides, etc.

Other data : No decomposition if stored and applied as directed.

SECTION 11: Toxicological information**Toluene Reference, Fuel Grade****Acute oral toxicity** : LD50: > 5,000 mg/kg
Method: Acute toxicity estimate**Toluene Reference, Fuel Grade****Acute inhalation toxicity** : LC50: > 20 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: Acute toxicity estimate**Toluene Reference, Fuel Grade****Acute dermal toxicity** : LD50: > 5,000 mg/kg
Method: Acute toxicity estimate**Toluene Reference, Fuel Grade****Skin irritation** : Irritating to skin.
May cause skin irritation in susceptible persons.**Toluene Reference, Fuel Grade****Eye irritation** : Eye irritation.
Vapors may cause irritation to the eyes, respiratory system and the skin.**Sensitization**

Toluene : Did not cause sensitization on laboratory animals.

Benzene : Did not cause sensitization on laboratory animals.

Toluene Reference, Fuel Grade**Repeated dose toxicity** : Method: Based on product or component testing, long term repeated exposure may cause damage to the following organs:
Target Organs: Auditory organs
Estimated based on individual component values.**Toluene Reference, Fuel Grade****Carcinogenicity** : Method: Estimated based on individual component values.
Remarks: Suspect cancer hazard**Reproductive toxicity**Toluene : Species: rat
Application Route: Inhalation
Dose: 0, 100, 500, 2000 ppm
Test period: 95 d
NOAEL Parent: 2000 ppm

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Developmental Toxicity

Toluene : Species: rat
 Application Route: Inhalation
 Dose: 0, 100, 500, 2000 ppm
 Test period: 95 d
 NOAEL Teratogenicity: 400-750 ppm

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Aspiration toxicity : May be fatal if swallowed and enters airways.
 Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effects

Toluene : Carcinogenicity: Not classifiable as a human carcinogen.
 Mutagenicity: Animal testing did not show any mutagenic effects.
 Teratogenicity: Some evidence of adverse effects on development, based on animal experiments.
 Reproductive toxicity: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Benzene : Carcinogenicity: Human carcinogen.
 Mutagenicity: In vivo tests showed mutagenic effects
 Teratogenicity: Did not show teratogenic effects in animal experiments.
 Reproductive toxicity: Animal testing did not show any effects on fertility.

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Further information : Solvents may degrease the skin.

SECTION 12: Ecological information**Toxicity to fish**

Toluene : LC50: 18 - 36 mg/l
 Exposure time: 96 h
 Species: Pimephales promelas (fathead minnow)

Benzene : LC50: 5.3 mg/l
 Exposure time: 96 h
 Species: Oncorhynchus mykiss (rainbow trout)
 flow-through test Test substance: yes
 Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

Toluene : EC50: 3.78 mg/l
 Exposure time: 48 h
 Species: Daphnia magna (Water flea)

Benzene : EC50: 10 mg/l

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Exposure time: 48 h
 Species: Daphnia magna (Water flea)
 static test Test substance: yes
 Method: OECD Test Guideline 202

Toxicity to algae

Toluene : EC50: 134 mg/l
 Exposure time: 72 h
 Species: Chlamydomonas angulosa (Green algae)

Benzene ErC50: 100 mg/l
 Exposure time: 72 h
 Species: Pseudokirchneriella subcapitata (green algae)
 Test substance: yes
 Method: OECD Test Guideline 201

Elimination information (persistence and degradability)

Biodegradability : Expected to be biodegradable

Ecotoxicology Assessment

Acute aquatic toxicity
 Toluene : Toxic to aquatic life.

Benzene : Toxic to aquatic life.

Chronic aquatic toxicity
 Toluene : Harmful to aquatic life with long lasting effects.

Benzene : Harmful to aquatic life with long lasting effects.

Results of PBT assessment
 Benzene : This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)., This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Additional ecological information : Toxic to aquatic life.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Toxic to aquatic life.

SECTION 13: Disposal considerations

The information in this MSDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

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- Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
- 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

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

UN1294, TOLUENE, 3, II, RQ (TOLUENE)

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN1294, TOLUENE, 3, II, (4.4 °C)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN1294, TOLUENE, 3, II

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))

UN1294, TOLUENE, 3, II, (D/E)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))

UN1294, TOLUENE, 3, II

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)

UN1294, TOLUENE, 3, II

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

SECTION 15: Regulatory information**National legislation**

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SARA 311/312 Hazards : Fire Hazard
Chronic Health Hazard

CERCLA Reportable : 1000 lbs
Quantity
Toluene

SARA 302 Reportable : This material does not contain any components with a SARA
Quantity 302 RQ.

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

SARA 304 Reportable : This material does not contain any components with a section
Quantity 304 EHS RQ.

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

: Toluene - 108-88-3

Clean Air Act

Ozone-Depletion : This product neither contains, nor was manufactured with a Class I or
Potential 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):

: Toluene - 108-88-3
Benzene - 71-43-2

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):

: Toluene - 108-88-3
Benzene - 71-43-2

US State Regulations

Pennsylvania Right To Know

: Toluene - 108-88-3

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Benzene - 71-43-2

New Jersey Right To Know

: Toluene - 108-88-3

California Prop. 65
Ingredients: WARNING! This product contains a chemical known in the
State of California to cause cancer.WARNING: This product contains a chemical known in the
State of California to cause birth defects or other reproductive
harm.**Notification status**

Europe REACH

: This mixture contains only ingredients which have been
subject to a pre-registration according to Regulation
(EU) No. 1907/2006 (REACH).

United States of America TSCA

: On TSCA Inventory

Canada DSL

: All components of this product are on the Canadian
DSL.

Australia AICS

: On the inventory, or in compliance with the inventory

New Zealand NZIoC

: On the inventory, or in compliance with the inventory

Japan ENCS

: On the inventory, or in compliance with the inventory

Korea KECI

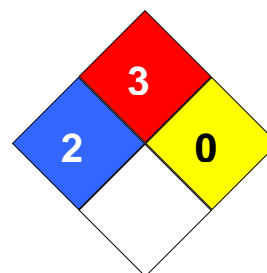
: On the inventory, or in compliance with the inventory

Philippines PICCS

: On the inventory, or in compliance with the inventory

China IECSC

: On the inventory, or in compliance with the inventory

SECTION 16: Other information**NFPA Classification**: Health Hazard: 2
Fire Hazard: 3
Reactivity Hazard: 0**Further information**

Legacy MSDS Number : 3476

Significant changes since the last version are highlighted in the margin. This version replaces all
previous versions.

The information in this MSDS pertains only to the product as shipped.

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

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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.

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
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%		