

**Reference Fuel B**

Version 1.1

Revision Date 2019-08-05

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

Product Name : Reference Fuel B  
Material : 1097282, 1069683, 1029654, 1030661, 1029655

Use : Fuel

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

Local : CHEVRON PHILLIPS CHEMICALS ASIA PTE. LTD.  
C/O DONG WOO CORPORATION  
#B-2601,JEONGJAIL-RO,  
BUNDANG-GU,SEONGNAMI-SI,  
GYEONGGI-DO,13557  
SOUTH KOREA  
Telephone no.: +612-9186-1132

**Emergency telephone:****Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

**Transport:**

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Mexico CHEMTREC 01-800-681-9531 (24 hours)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Argentina: +(54)-1159839431

Responsible Department : Product Safety and Toxicology Group

E-mail address : SDS@CPChem.com

Website : www.CPChem.com

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

**Standards for classification and labeling of chemical substances and material safety data sheet (ministry of employment and labor public notice No. 2016-19) (GHS 2011)**

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**Classification**

: Flammable liquids, Category 2  
 Skin corrosion/irritation, Category 2  
 Reproductive toxicity, Category 2  
 Specific target organ toxicity - single exposure, Category 3,  
 Central nervous system  
 Specific target organ toxicity - repeated exposure, Category 2  
 Aspiration hazard, Category 1  
 Short-term (acute) aquatic hazard, Category 1  
 Long-term (chronic) aquatic 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.  
 H336: May cause drowsiness or dizziness.  
 H361: Suspected of damaging fertility or the unborn child.  
 H373: May cause damage to organs through prolonged or repeated exposure.  
 H400: Very toxic to aquatic life.  
 H410: Very toxic to aquatic life with long lasting effects.

Precautionary Statements

: **Prevention:**  
 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.  
 P273: Avoid release to the environment.  
 P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.  
**Response:**  
 P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.  
 P303 + P361 + P353: IF ON SKIN (or hair): 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.  
 P308 + P313: IF exposed or concerned: Get medical advice/ attention.  
 P321: Specific treatment (see supplemental first aid instructions on this label).  
 P331: Do NOT induce vomiting.  
 P362 + P364: Take off contaminated clothing and wash it

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before reuse.

P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P391: Collect spillage.

**Storage:**

P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

P403 + P235: Store in a well-ventilated place. Keep cool.

P405: Store locked up.

**Disposal:**

P501: Dispose of contents and container according to wastes control act.

**SECTION 3: Composition/information on ingredients**

Molecular formula : Mixture

Chemical name	CAS-No.	Concentration	KECI Number
2,2,4-Trimethylpentane (Isooctane)	540-84-1	69 % - 71%	KE-34634
Toluene	108-88-3	29 % - 31%	KE-33936

**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 : Immediately flush eye(s) with plenty of water. 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. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

**SECTION 5: Firefighting measures**

- Flash point : -12.1 °C (10.2 °F)  
Method: Tag closed cup
- Autoignition temperature : No data available
- Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical.

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- Unsuitable extinguishing media : High volume water jet.
- 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 firefighting 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 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.

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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.

Use : Fuel

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

KR

Components	Basis	Value	Control parameters	Note
Toluene	KR OEL	TWA	50 ppm,	repr 2,
	KR OEL	STEL	150 ppm,	repr 2,

repr 2 Suspected human reproductive toxicant

KR

Substance name	CAS-No.	Control parameters	Sampling time	Update

**Engineering measures**

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

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	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	: Liquid
Physical state	: Liquid
Color	: Colorless
Odor	: Mild, Hydrocarbon

**Safety data**

Flash point	: -12.1 °C (10.2 °F) Method: Tag closed cup
Lower explosion limit	: 1 %(V)
Upper explosion limit	: 6.5 %(V)
Oxidizing properties	: No
Autoignition temperature	: No data available
Molecular formula	: Mixture
Molecular weight	: Not applicable
pH	: Not applicable
Freezing point	: No data available
Pour point	: No data available
Boiling point/boiling range	: 99 °C (210 °F)
Vapor pressure	: 1.50 PSI at 37.8 °C (100.0 °F)
Relative density	: 0.75 at 15.6 °C (60.1 °F)
Water solubility	: Negligible

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Partition coefficient: n-octanol/water	: No data available
Viscosity, kinematic	: No data available
Relative vapor density	: 3.69 (Air = 1.0)
Evaporation rate	: 1
Percent volatile	: > 99 %

**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.

**Possibility of hazardous reactions**

**Hazardous reactions** : Hazardous reactions: Hazardous polymerization does not occur.

Further information: No decomposition if stored and applied as directed.

Hazardous reactions: Vapors may form explosive mixture with air.

**Conditions to avoid** : Heat, flames and sparks.

**Materials to avoid** : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

**Hazardous decomposition products** : Carbon oxides

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

**SECTION 11: Toxicological information**

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**Acute oral toxicity** : LD50: > 5,000 mg/kg  
Method: Acute toxicity estimate

**Reference Fuel B**  
**Acute inhalation toxicity** : LC50: > 40 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Method: Acute toxicity estimate

**Reference Fuel B**  
**Acute dermal toxicity** : LD50: > 5,000 mg/kg

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Method: Acute toxicity estimate

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Skin irritation**: Skin irritation  
largely based on animal evidence.**Reference Fuel B  
Eye irritation**: Eye irritation  
largely based on animal evidence.**Reference Fuel B  
Sensitization**: Not a skin sensitizer.  
largely based on animal evidence.**Reference Fuel B  
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.**Genotoxicity in vitro**2,2,4-Trimethylpentane  
(Isooctane): Test Type: Ames test  
Method: Mutagenicity (Escherichia coli - reverse mutation  
assay)  
Result: negativeTest Type: Mouse lymphoma assay  
Method: OECD Guideline 476  
Result: negativeTest Type: Sister Chromatid Exchange Assay  
Result: negativeTest Type: Unscheduled DNA synthesis assay  
Result: negative

Toluene

Test Type: Ames test  
Result: negativeTest Type: Sister Chromatid Exchange Assay  
Result: negativeTest Type: Mouse lymphoma assay  
Result: negativeTest Type: Cytogenetic assay  
Result: negative**Genotoxicity in vivo**2,2,4-Trimethylpentane  
(Isooctane): Test Type: Unscheduled DNA synthesis assay  
Species: Mouse  
Dose: 500 mg/kg  
Result: negative



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	Test Type: Unscheduled DNA synthesis assay Species: Rat Dose: 500 mg/kg Result: negative
Toluene	Test Type: Cytogenetic assay Result: negative
	Test Type: Mouse micronucleus assay Result: negative
<b>Reference Fuel B Carcinogenicity</b>	: Remarks: Not expected to be carcinogenic based on individual component data.
<b>Reference Fuel B Reproductive toxicity</b>	: Suspected of damaging fertility or the unborn child.
<b>Reference Fuel B Developmental Toxicity</b>	: Suspected of damaging fertility or the unborn child.
<b>Reference Fuel B Aspiration toxicity</b>	: May be fatal if swallowed and enters airways.
<b>CMR effects</b>	
2,2,4-Trimethylpentane (Isooctane)	: Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Teratogenicity: Animal testing did not show any effects on fetal development. Reproductive toxicity: Animal testing did not show any effects on fertility.
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.
<b>Reference Fuel B Further information</b>	: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.

**SECTION 12: Ecological information****Ecotoxicity effects****Toxicity to fish** : LC50: 1 - 10 mg/l

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Species: Fish

**Toxicity to daphnia and other aquatic invertebrates** : LC50: 1 - 10 mg/l  
Species: Daphnia

**Toxicity to algae** : EC50: 1 - 10 mg/l  
Species: algae

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)** : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Biodegradability : This material is not expected to be readily biodegradable.

Elimination information (persistence and degradability)

Results of PBT assessment

2,2,4-Trimethylpentane (Isooctane) : Non-classified PBT substance, Non-classified vPvB substance

Toluene : Non-classified vPvB substance, Non-classified PBT substance

Additional ecological information : Very toxic to aquatic life with long lasting effects.

**Ecotoxicology Assessment**

Short-term (acute) aquatic hazard

2,2,4-Trimethylpentane (Isooctane) : Very toxic to aquatic life.

Toluene : Toxic to aquatic life.

Long-term (chronic) aquatic hazard

2,2,4-Trimethylpentane (Isooctane) : Very toxic to aquatic life with long lasting effects.

Toluene : Harmful to aquatic life with long lasting effects.

**SECTION 13: Disposal considerations**

The information in this SDS 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.

**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.

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**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 SDS and the bill of lading.

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II, MARINE POLLUTANT, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE))

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II, (-12.1 °C), MARINE POLLUTANT, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE))

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II

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

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE))

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

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II, ENVIRONMENTALLY HAZARDOUS, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE))

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

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II, ENVIRONMENTALLY HAZARDOUS, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE))

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

**SECTION 15: Regulatory information****National legislation****Regulation under the Occupational Safety and Health Act**

A Material Safety Datasheet (MSDS) has to be prepared and provided for this product according to article 41 of ISHA.

Regulation	Chemical name	Threshold

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	limits
Harmful Substances Prohibited from Manufacturing	: Not applicable
Harmful Substances Required Permission for Manufacture	: Not applicable

**Act on the Registration and Evaluation, etc. of Chemical Substances, Chemicals Control Act**

Regulation	Chemical name	Threshold limits
Toxic Chemicals	: Not applicable	
Prohibited Chemicals	: Not applicable	
Restricted Chemicals	: Not applicable	
Toxic Release Inventory	: toluene	>= 1 %

**Dangerous Substances Safety Management Act**

Dangerous Substances Safety Management Act : Flammable liquids, Type 1 petroleums, Water insoluble liquid

**Notification status**

Europe REACH : This mixture contains only ingredients which have been registered according to Regulation (EU) No. 1907/2006 (REACH).

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

United States of America (USA) TSCA : On the inventory, or in compliance with the 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 : Not in compliance with the inventory

Japan ENCS : On the inventory, or in compliance with the inventory

Korea KECI : A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance.

Philippines PICCS : On the inventory, or in compliance with the inventory

China IECSC : On the inventory, or in compliance with the inventory

Taiwan TCSI : On the inventory, or in compliance with the inventory

**SECTION 16: Other information****Further information**

Legacy SDS Number : 99370

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

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

The information provided in this 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

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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.

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%		