SECTION 1. IDENTIFICATION

Product name : RAFFINATE
Synonyms : Solvent 1225, lighting naphtha, coleman fuel

Manufacturer or supplier's details
SUNCOR ENERGY INC.
P.O. Box 2844, 150 - 6th Avenue South-West
Calgary Alberta T2P 3E3
Canada

Emergency telephone number
Suncor Energy: +1 403-296-3000;
Canutec Transportation: 1-888-226-8832 (toll-free) or 613-996-6666;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use
Recommended use : Raffinate is a refinery process stream produced at Montreal Refinery's #41 Extract Unit.
Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

<table>
<thead>
<tr>
<th>Appearance</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>Naphtha-like.</td>
</tr>
</tbody>
</table>

GHS Classification
Flammable liquids : Category 1
Skin irritation : Category 2
Germ cell mutagenicity : Category 1B
Carcinogenicity : Category 1A
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

GHS label elements
Hazard pictograms: 

Signal word: Danger

Hazard statements: 
- Extremely flammable liquid and vapour.
- May be fatal if swallowed and enters airways.
- Causes skin irritation.
- May cause drowsiness or dizziness.
- May cause genetic defects.
- May cause cancer.
- Suspected of damaging fertility or the unborn child.
- May cause damage to organs through prolonged or repeated exposure.

Precautionary statements: 

Prevention:
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Keep container tightly closed.
- Ground and bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Use non-sparking tools.
- Take action to prevent static discharges.
- Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
- Wash skin thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
- IF SWALLOWED: Immediately call a POISON CENTER/doctor.
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
- IF exposed or concerned: Get medical advice/ attention.
- Do NOT induce vomiting.
- If skin irritation occurs: Get medical advice/ attention.
- Take off contaminated clothing and wash it before reuse.
- In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:
- Store in a well-ventilated place. Keep container tightly closed.
- Store in a well-ventilated place. Keep cool.
- Store locked up.

Disposal:
- Dispose of contents/ container to an approved waste disposal
Potential Health Effects

Primary Routes of Entry:
- Eye contact
- Ingestion
- Inhalation
- Skin contact

Aggravated Medical Condition:
None known.

Other hazards
None known.

IARC
Group 1: Carcinogenic to humans
Benzene 71-43-2

Group 2B: Possibly carcinogenic to humans
Ethylbenzene 100-41-4

ACGIH
Confirmed human carcinogen
Benzene 71-43-2

Confirmed animal carcinogen with unknown relevance to humans
Ethylbenzene 100-41-4

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous components</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>naphtha (petroleum), solvent-refined light</td>
<td>64741-84-0</td>
<td>80 - 95 %</td>
</tr>
<tr>
<td>xylene</td>
<td>1330-20-7</td>
<td>1 - 3 %</td>
</tr>
<tr>
<td>trimethylbenzene</td>
<td>25551-13-7</td>
<td>5 - 7 %</td>
</tr>
<tr>
<td>diethylbenzene</td>
<td>25340-17-4</td>
<td>1 - 5 %</td>
</tr>
<tr>
<td>toluene</td>
<td>108-88-3</td>
<td>0.8 - 1 %</td>
</tr>
<tr>
<td>ethylbenzene</td>
<td>100-41-4</td>
<td>0.4 - 0.7 %</td>
</tr>
<tr>
<td>benzene</td>
<td>71-43-2</td>
<td>0.1 - 0.3 %</td>
</tr>
</tbody>
</table>

All concentrations are in percent by weight.
SECTION 4. FIRST AID MEASURES

If inhaled:
- Move to fresh air.
- Artificial respiration and/or oxygen may be necessary.
- Seek medical advice.

In case of skin contact:
- In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash skin thoroughly with soap and water or use recognized skin cleanser.
- Wash clothing before reuse.
- Seek medical advice.

In case of eye contact:
- Remove contact lenses.
- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Obtain medical attention.

If swallowed:
- Rinse mouth with water.
- DO NOT induce vomiting unless directed to do so by a physician or poison control center.
- Never give anything by mouth to an unconscious person.
- Seek medical advice.

Most important symptoms and effects, both acute and delayed:
- Respiratory, skin and eye irritation; nausea; cancer.

Notes to physician:
- Treat symptomatically.
- Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media:
- Dry chemical
- Carbon dioxide (CO2)
- Water spray
- Foam
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media:
- Do NOT use water jet.

Specific hazards during firefighting:
- Cool closed containers exposed to fire with water spray.

Hazardous combustion products:
- Carbon oxides (CO, CO2), aldehydes, ketones, hydrocarbons, smoke and irritating vapours as products of incomplete combustion.

Further information:
- Prevent fire extinguishing water from contaminating surface
water or the ground water system.

Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary. Wear a positive-pressure supplied-air respirator with full facepiece.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Ensure adequate ventilation. For personal protection see section 8. Evacuate personnel to safe areas. Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust). Material can create slippery conditions.

Environmental precautions: Do not allow uncontrolled discharge of product into the environment. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up: Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation. Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling: For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Do not ingest. Avoid contact with skin, eyes and clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Keep away from heat and sources of ignition. Keep container closed when not in use. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.

Conditions for safe storage: Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight. Ensure the storage containers are grounded/bonded.
## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>xylene</td>
<td>1330-20-7</td>
<td>STEL 150 ppm 651 mg/m³</td>
<td>CA AB OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 100 ppm 434 mg/m³</td>
<td>CA AB OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWAEV 100 ppm 434 mg/m³</td>
<td>CA QC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEV 150 ppm 651 mg/m³</td>
<td>CA QC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 100 ppm</td>
<td>CA BC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 150 ppm</td>
<td>CA BC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 100 ppm</td>
<td>ACGIH</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 150 ppm</td>
<td>ACGIH</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 100 ppm</td>
<td>ACGIH</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 150 ppm</td>
<td>ACGIH</td>
<td></td>
</tr>
<tr>
<td>trimethylbenzene</td>
<td>25551-13-7</td>
<td>TWA 25 ppm 123 mg/m³</td>
<td>CA AB OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWAEV 25 ppm 123 mg/m³</td>
<td>CA QC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 25 ppm</td>
<td>CA BC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 25 ppm</td>
<td>ACGIH</td>
<td></td>
</tr>
<tr>
<td>toluene</td>
<td>108-88-3</td>
<td>TWA 50 ppm 188 mg/m³</td>
<td>CA AB OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 20 ppm 188 mg/m³</td>
<td>CA BC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWAEV 50 ppm 188 mg/m³</td>
<td>CA QC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 20 ppm</td>
<td>ACGIH</td>
<td></td>
</tr>
<tr>
<td>ethylbenzene</td>
<td>100-41-4</td>
<td>TWA 100 ppm 434 mg/m³</td>
<td>CA AB OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 125 ppm 543 mg/m³</td>
<td>CA AB OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 20 ppm</td>
<td>CA BC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEV 125 ppm 543 mg/m³</td>
<td>CA QC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWAEV 100 ppm 434 mg/m³</td>
<td>CA QC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 20 ppm</td>
<td>ACGIH</td>
<td></td>
</tr>
<tr>
<td>benzene</td>
<td>71-43-2</td>
<td>TWA 0.5 ppm 1.6 mg/m³</td>
<td>CA AB OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 2.5 ppm 8 mg/m³</td>
<td>CA AB OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 0.5 ppm 8 mg/m³</td>
<td>CA BC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 2.5 ppm</td>
<td>CA BC OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 0.5 ppm</td>
<td>CA ON OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 2.5 ppm</td>
<td>CA ON OEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWAEV 1 ppm 3 mg/m³</td>
<td>CA QC OEL</td>
<td></td>
</tr>
</tbody>
</table>
Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Biological specimen</th>
<th>Sampling time</th>
<th>Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>Toluene</td>
<td>In blood</td>
<td>Prior to last shift of work-week</td>
<td>Toluene</td>
<td>Prior to last shift of work-week</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>Toluene</td>
<td>Urine</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td>Toluene</td>
<td>End of shift (As soon as possible after exposure ceases)</td>
</tr>
</tbody>
</table>

Engineering measures

- Use only in well-ventilated areas.
- Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.

Personal protective equipment

Respiratory protection

- Concentration in air determines protection needed.
- Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.
- Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type

- A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection

- Material: polyvinyl alcohol (PVA), fluoro-elastomer. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Eye protection

- Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific workplace.

Protective measures: Wash contaminated clothing before re-use. Wash hands and face before breaks and immediately after handling the product. Ensure that eyewash station and safety shower are proximal to the work-station location.

Hygiene measures: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: liquid

Colour: colourless

Odour: Naphtha-like.

Odour Threshold: No data available

pH: No data available

Melting point: No data available

Boiling point/boiling range: 24 - 215 °C (75 - 419 °F)

Decomposition temperature: No data available

Flash point: 20 °C (68 °F)

Method: Tagliabue

Auto-Ignition Temperature: > 200 °C (> 392 °F)

Evaporation rate: No data available

Flammability: Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.

Upper explosion limit: 5.9 % (V)

Lower explosion limit: 1.1 % (V)

Vapour pressure: 0.5 - 0.6 psi

Relative vapour density: 3

Air = 1

Relative density: 0.7 - 0.9
Solubility(ies)
Water solubility : insoluble
Partition coefficient: n-octanol/water : No data available

Viscosity
Viscosity, kinematic : No data available

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 : Hazardous polymerisation does not occur.
Conditions to avoid : Extremes of temperature and direct sunlight.
Incompatible materials : Reactive with oxidising agents, acids and interhalogens.
Hazardous decomposition products : May release COx, aldehydes, ketones, hydrocarbons, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION
Information on likely routes of exposure
Eye contact
Ingestion
Inhalation
Skin contact
Acute toxicity

Product:
Acute oral toxicity : Remarks: No data available
Acute inhalation toxicity : Remarks: No data available
Acute dermal toxicity : Remarks: No data available

Components:
xylene:
Acute oral toxicity : LD50 (Rat): 4,300 mg/kg,
Acute inhalation toxicity : LC50 (Rat): 5000 ppm
Exposure time: 4 h
Test atmosphere: dust/mist
<table>
<thead>
<tr>
<th>Substance</th>
<th>Acute dermal toxicity LD50 (Rabbit)</th>
<th>Acute oral toxicity LD50 (Rat)</th>
<th>Acute inhalation toxicity LC50 (Rat)</th>
<th>Exposure time</th>
<th>Test atmosphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>&gt; 1,700 mg/kg</td>
<td>5,580 mg/kg</td>
<td>7585 ppm</td>
<td>4 h</td>
<td>dust/mist</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>LD50 (Rabbit): 12,125 mg/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td>LD50 (Rat): 3,500 mg/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>LC50 (Rat): 4000 ppm</td>
<td></td>
<td></td>
<td>4 h</td>
<td>vapor</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>LD50 (Rabbit): 15,380 mg/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td>LD50 (Rat): 2,990 mg/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>LC50 (Rat): 13700 ppm</td>
<td></td>
<td></td>
<td>4 h</td>
<td>dust/mist</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>LD50 (Rabbit): &gt; 8,240 mg/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation**

**Product:**
Remarks: Causes skin irritation.

**Serious eye damage/eye irritation**

**Product:**
Remarks: No data available

**Respiratory or skin sensitisation**
No data available

**Germ cell mutagenicity**

**Product:**
Germ cell mutagenicity-Assessment: May cause genetic defects.

No data available

**Carcinogenicity**
Product:
Carcinogenicity - Assessment
May cause cancer.

Reproductive toxicity

Product:
Reproductive toxicity - Assessment
Suspected of damaging fertility or the unborn child.

STOT - single exposure

Product:
Remarks: May cause drowsiness or dizziness.

STOT - repeated exposure

Product:
Remarks: May cause damage to organs through prolonged or repeated exposure.

No data available

Aspiration toxicity

Product:
May be fatal if swallowed and enters airways.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:
Toxicity to fish : Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available
Toxicity to algae : Remarks: No data available
Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:
Biodegradability : Remarks: No data available
Bioaccumulative potential
No data available

Mobility in soil
No data available

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
UN/ID No.: UN 1268
Proper shipping name: Petroleum distillates, n.o.s.
Class: 3
Packing group: I
Labels: Class 3 - Flammable Liquid
Packing instruction (cargo aircraft): 361

IMDG-Code
UN number: UN 1268
Proper shipping name: PETROLEUM DISTILLATES, N.O.S.
Class: 3
Packing group: I
Labels: 3
EmS Code: F-E, S-E
Marine pollutant: no

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

National Regulations

TDG
UN number: UN 1268
Proper shipping name: PETROLEUM DISTILLATES, N.O.S.
SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all of the information required by the HPR.

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

DSL On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

For Copy of SDS : Internet: www.petro-canada.ca/msds
                  Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
                  For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752
Revision Date : 2019/01/31

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 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.