SECTION 1. IDENTIFICATION

<table>
<thead>
<tr>
<th>Product name</th>
<th>HEATING FUEL OIL TYPE 6/RESIDUAL MARINE FUEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>Heavy Fuel No. 6- 1.0%S, 1.5%S, 2.0%S &amp; 3.0%S, Residual Marine Fuel Category ISO-F RMG 180/380/500/700, Intermediate Fuel Oil (IFO) 180/380/500/700, Marine Fuel Oil (MFO) 180/380/500/700, Marine Bunker, Bunker, Reduced Crude, Delayed Coker Feed, Flexicoker Feed, Cutterstock, Heavy Bunker, Visbreaker bottoms</td>
</tr>
<tr>
<td>Product code</td>
<td>101889, 102593, 101981, 102665, 100114, 100113, 100112</td>
</tr>
<tr>
<td>Manufacturer or supplier's details</td>
<td>SUNCOR ENERGY INC.</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 2844, 150 - 6th Avenue South-West</td>
</tr>
<tr>
<td></td>
<td>Calgary Alberta T2P 3E3</td>
</tr>
<tr>
<td></td>
<td>Canada</td>
</tr>
<tr>
<td>Emergency telephone number</td>
<td>Suncor Energy: +1 403-296-3000;</td>
</tr>
<tr>
<td></td>
<td>Canutec Transportation: 1-888-226-8832 (toll-free) or 613-996-6666;</td>
</tr>
<tr>
<td></td>
<td>Poison Control Centre: Consult local telephone directory for emergency number(s).</td>
</tr>
</tbody>
</table>

Recommended use of the chemical and restrictions on use

<table>
<thead>
<tr>
<th>Recommended use</th>
<th>Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared by</td>
<td>Product Safety: +1 905-804-4752</td>
</tr>
</tbody>
</table>

SECTION 2. HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>Emergency Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
</tr>
<tr>
<td>Colour</td>
</tr>
<tr>
<td>Odour</td>
</tr>
</tbody>
</table>

GHS Classification

<table>
<thead>
<tr>
<th>Flammable liquids</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity (Inhalation)</td>
<td>Category 4</td>
</tr>
<tr>
<td>Skin irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Category 1B</td>
</tr>
<tr>
<td>Specific target organ toxicity</td>
<td>Category 1 (Liver, Blood, thymus)</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
HEATING FUEL OIL TYPE 6/RESIDUAL MARINE FUEL
SEP000000048

- repeated exposure

GHS label elements
Hazard pictograms :

Signal word : Danger
Hazard statements :
Combustible liquid.
Causes skin irritation.
Harmful if inhaled.
May cause cancer.
Causes damage to organs (Liver, Blood, thymus) 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.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF ON SKIN: Wash with plenty of 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.
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.
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects
Primary Routes of Entry :
Inhalation
Eye contact
Skin contact
Ingestion

Aggravated Medical Condition :
None known.
Other hazards
None known.

IARC
Group 2A: Probably carcinogenic to humans
Distillates (petroleum), heavy catalytic cracked 64741-61-3
Residues, petroleum, atm tower 64741-45-3
Distillates (petroleum), light catalytic cracked 64741-59-9

Group 2B: Possibly carcinogenic to humans
Residues (petroleum), vacuum 64741-56-6

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.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Hazardous components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixture</td>
<td>Chemical name</td>
</tr>
<tr>
<td></td>
<td>fuel oil, residual</td>
</tr>
<tr>
<td></td>
<td>fuel oil No.6</td>
</tr>
<tr>
<td></td>
<td>Residues (petroleum), vacuum</td>
</tr>
<tr>
<td></td>
<td>distillates (petroleum), heavy catalytic cracked</td>
</tr>
<tr>
<td></td>
<td>residues (petroleum), atm.tower</td>
</tr>
<tr>
<td></td>
<td>distillates (petroleum), light catalytic cracked</td>
</tr>
<tr>
<td></td>
<td>sulfur</td>
</tr>
</tbody>
</table>

All above concentrations are in percent by weight.
Note: Bunker contains approximately 0-100ppm of vanadium.
Caution: When heated, toxic hydrogen sulphide may be generated.

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 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. Thoroughly clean shoes 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 tract, eye, and skin irritation.
- Inhalation may cause central nervous system effects.
- Symptoms of hydrogen sulphide overexposure include respiratory tract irritation and shortness of breath.
- Exposure to very high levels of hydrogen sulphide (> 500 ppm) will result in unconsciousness and death.

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

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), nitrogen oxides (NOx), phosphorus oxides (POx), sulphur oxides (SOx), sulphur compounds (H2S), PAHs, 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.
PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:
For personal protection see section 8. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions.

ENVIRONMENTAL PRECAUTIONS:
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. Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. Smoking, eating and drinking should be prohibited in the application area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Keep away from heat and sources of ignition. Keep container closed when not in use. Hydrogen sulphide may accumulate in enclosed spaces. Open tank car hatches with caution.

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. Hydrogen sulphide may be released and collect in the vapor space of process vessels and storage tanks.

SECTION 8. EXPOSURE CONTROLS/PERSO...
SAFETY DATA SHEET
HEATING FUEL OIL TYPE 6/RESIDUAL MARINE FUEL

Ceiling 10 ppm CA BC OEL
TWA 10 ppm CA ON OEL
STEL 15 ppm CA ON OEL
TWA EV 10 ppm 14 mg/m³ CA QC OEL
STEV 15 ppm 21 mg/m³ CA QC OEL
TWA 1 ppm ACGIH
STEL 5 ppm ACGIH

Engineering measures: 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. If hydrogen sulphide is present full-face supplied air respirator with escape bottle or SCBA is required.

Filter type: 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: neoprene, nitrile, polyvinyl alcohol (PVA). 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.

Remarks: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection: Wear face-shield and protective suit for abnormal processing problems. Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the spe-
### Protective measures:
- Wash contaminated clothing before re-use.

### 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**: dark
- **Odour**: hydrocarbon-like, "Rotten egg" if H2S present, but odour is an unreliable warning, since it may deaden the sense of smell.
- **Odour Threshold**: No data available
- **pH**: No data available
- **Melting point/range**: 18 °C (64 °F)
- **Boiling point/boiling range**: 315 - 545 °C (599 - 1013 °F)
- **Decomposition temperature**: No data available
- **Flash point**: > 60 °C (> 140 °F)
  - Method: Pensky-Martens closed cup
- **Auto-Ignition Temperature**: 407 °C (765 °F)
- **Evaporation rate**: No data available
- **Flammability**: Flammable in presence of open flames, sparks and heat. This product can accumulate static charge and ignite.
- **Upper explosion limit**: No data available
- **Lower explosion limit**: No data available
- **Vapour pressure**: No data available
- **Relative vapour density**: No data available
- **Relative density**: <= 1.0
  - Water = 1
- **Solubility(ies)**: insoluble
- **Partition coefficient: n-octanol/water**: No data available
- **Viscosity**: No data available
- **Viscosity, kinematic**: > 640 cSt (40 °C / 104 °F)
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.

Hazardous decomposition products
May release COx, NOx, SOx, POx, PAHs, H2S, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Inhalation
eye contact
Skin contact
Ingestion

Acute toxicity

Product:
Acute oral toxicity
Remarks: Based on available data, the classification criteria are not met.

Acute inhalation toxicity
Remarks: Harmful if inhaled.
Acute toxicity estimate: 1.41 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity
Remarks: Based on available data, the classification criteria are not met.

Components:
Residues (petroleum), vacuum:
Acute oral toxicity
LD50 (Rat): 4,320 mg/kg,

Acute dermal toxicity
LD50 (Rabbit): > 2,000 mg/kg,

distillates (petroleum), light catalytic cracked:
Acute oral toxicity
LD50 (Rat): 3,200 mg/kg,

Acute inhalation toxicity
LC50 (Rat): 3.4 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity: LD50 (Rabbit): > 2,000 mg/kg,

sulfur:
Acute dermal toxicity: LD50 (Rabbit): > 2,000 mg/kg,

Skin corrosion/irritation

Product:
Remarks: Causes skin irritation.

Serious eye damage/eye irritation

Product:
Remarks: Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Product:
Remarks: Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Product:
Germ cell mutagenicity - Assessment: Based on available data, the classification criteria are not met.

Carcinogenicity

Product:
Carcinogenicity - Assessment: May cause cancer.

Reproductive toxicity

Product:
Reproductive toxicity - Assessment: Based on available data, the classification criteria are not met.

STOT - single exposure

Product:
Remarks: Based on available data, the classification criteria are not met.

STOT - repeated exposure

Product:
Target Organs: Liver, Blood, thymus
Remarks: Causes damage to organs through prolonged or repeated exposure.

No data available

Aspiration toxicity

Product:
Based on available data, the classification criteria are not met.

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.
SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
Not permitted for transport

IMDG-Code
UN number: UN 3256
Proper shipping name: ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S., WITH FLASH POINT ABOVE 60°C, AT OR ABOVE ITS FLASH POINT (Bunker)

Class: 3
Packing group: III
Labels: 3
EmS Code: F-E, S-D
Marine pollutant: no

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

National Regulations

TDG
UN number: UN 3256
Proper shipping name: ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S., WITH FLASH POINT ABOVE 60°C, AT OR ABOVE ITS FLASH POINT (Bunker)

Class: 3
Packing group: III
Labels: 3
ERG Code: 128
Marine pollutant: no

This product is not regulated under the Canadian Transportation of Dangerous Goods Regulations for transport by road and rail when shipped at a temperature below the flash point.

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
All components of this product are on the Canadian DSL

SECTION 16. OTHER INFORMATION
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.