



# Safety Data Sheet




Produced water, sweet

## 1. Identification

|  |  |
|--|--|
| <b>GHS product identifier:</b> Produced water, sweet   | <b>Version #:</b> 01                           |
| <b>Synonyms:</b>   | <b>Issue date:</b> 07/31/2013                  |
|  | <b>Revision date:</b> 07/31/2016               |
|  | <b>Supersedes date:</b> Previous to 07/31/2013 |
| <b>CAS #:</b> Mixture  |  |
| <b>Recommended use:</b> Product produced at Encana well sites. Includes liquids, except for natural gas condensates generated from a producing well. |  |
| <b>Recommended restrictions:</b> Use in accordance with this SDS.  |  |
| <b>Manufacturer:</b> Encana Oil & Gas (USA) Inc.<br>370 17 <sup>th</sup> Street, Suite 1700<br>Denver, CO 80202                                      |  |
| <b>Emergency phone #:</b> 866-244-0062<br>911  | <b>Email:</b> SDS@encana.com                   |

## 2. Hazard identification

### GHS classification & label elements

| <b>Signal word:</b> <b>Danger</b> |  |          |   |
|-----------------------------------|--|----------|---|
| Type of Hazard                    |  | Category | Hazard Symbol   |
| Physical Hazards                  | Flammable liquids                                      | 3        |  |
| Health Hazards                    | Skin corrosion/irritation<br>Reproductive toxicity     | 3<br>2   |  |
| Environmental Hazards             | Hazardous to the aquatic environment, long-term hazard | 2        |  |

- Hazard statement**
- Causes mild skin irritation.
  - Suspected of damaging fertility.
  - Toxic to aquatic life with long-lasting effects.

- Precautionary statement**
- Prevention:
- Do not handle until all safety precautions have been read and understood.
  - Obtain special instructions before use.
  - Keep away from flames and hot surfaces— no smoking.
  - Use personal protective equipment to prevent contact, as determined by assessing hazards and likely routes of exposure.
  - Wear protective gloves, eye protection, and face protection.
  - Avoid release to the environment.
- Response:
- In case of fire, use alcohol-resistant foam, carbon dioxide, dry powder, or water fog for extinction.
  - If exposed or concerned, get medical advice/attention.
  - Collect spillage if safe to do so.
- Storage:
- Store in a well-ventilated place.
  - Keep cool.
  - Store locked up.
- Disposal:
- Dispose of contents in accordance with local, regional, national, and international regulations.
- Special hazards
- Direct contact with eyes may cause temporary irritation.
  - Prolonged contact may cause dryness of the skin.
- Hazards not otherwise classified:
- None.

### 3. Composition / information on ingredients

| Components | Common Synonyms | CAS #    | Percent (by weight) |
|------------|-----------------|----------|---------------------|
| Octane     |                 | 111-65-9 | 1-<10%              |
| Decane     |                 | 124-18-5 | 1-<5%               |
| Heptane    |                 | 142-82-5 | 1-<5%               |
| n-Hexane   |                 | 110-54-3 | 0.1-<2.5%           |

## 4. First aid measures

**First aid procedures**

Inhalation:

- Move to fresh air.
- Get medical attention if discomfort develops or persists.

Skin contact:

- Remove contaminated clothing.
- Wash with soap and water.
- For rashes, wounds, or other skin disorders, seek medical attention and bring along this SDS.

Eye contact:

- Remove any contact lenses and open eyelids wide apart.
- Immediately flush with plenty of water for up to 15 minutes.
- Get medical attention if irritation or symptoms persists

Ingestion:

- Rinse mouth.
- Never give anything by mouth to an unconscious person.
- Do not induce vomiting unless told to do so by a poison control center or doctor.

**Most important symptoms/effects (acute & delayed)**

- May cause redness and pain.
- May cause eye irritation on direct contact.

**Notes to physician**

- Treat symptomatically.
- The effects might be delayed.

**General advice**

Get medical attention if any discomfort develops.

## 5. Fire-fighting measures

### Flammable properties

- The product is flammable.
- Heating may generate vapors which may form explosive vapor/air mixtures.
- See Sections 9 and 10 for physical/chemical and stability/reactive properties
- NFPA: Health: 1, Flammability: 2, Instability: 0.

### Extinguishing media

| Suitable   | Do not use  |
|--|---|
| <ul style="list-style-type: none"> <li>▪ Water spray</li> <li>▪ Fog</li> </ul> | <ul style="list-style-type: none"> <li>▪ Water jet, which will spread the fire.</li> <li>▪ Simultaneous use of foam and water on the same surface, as water destroys the foam.</li> </ul> |

| Suitable  | Do not use |
|---|------------|
| <ul style="list-style-type: none"> <li>▪ Carbon dioxide (CO<sub>2</sub>)</li> <li>▪ Dry chemical <i>or</i></li> <li>▪ Alcohol-resistant foam</li> </ul> |            |

### Protection of fire-fighters

| Specific hazards arising from the chemical  | Protective equipment and precautions   |
|---|--|
| <ul style="list-style-type: none"> <li>▪ Heating may generate vapors, which may form explosive vapor/air mixtures.</li> </ul> | <ul style="list-style-type: none"> <li>▪ Fire-fighters must wear full protective clothing &amp; a self-contained breathing apparatus (SCBA) when in poorly ventilated area.</li> </ul> |

### Fire-fighting equipment / instructions

- Use standard firefighting procedures and consider the hazards of other involved materials.
- Move containers of product, if possible, from fire area if you can do it without risk.
- Use water spray to cool unopened containers.
- Cool containers with flooding quantities of water until well after fire is out.

## 6. Accidental release measures

- |                                  |   |
|----------------------------------|---|
| <b>Personal precautions</b>      | <ul style="list-style-type: none"> <li>▪ Avoid prolonged and repeated contact.</li> <li>▪ Wear suitable protective clothing; for personal protection, see Section 8 of this SDS.</li> </ul>   |
| <b>Environmental precautions</b> | <ul style="list-style-type: none"> <li>▪ Avoid discharge into drains, water courses, or onto the ground.</li> </ul>   |
| <b>Methods of containment</b>    | <ul style="list-style-type: none"> <li>▪ Do not allow to enter drains, sewers, or watercourses.</li> </ul>  |
| <b>Methods for cleaning up</b>   | <ul style="list-style-type: none"> <li>▪ Small spills: absorb spillage with suitable absorbent material.</li> <li>▪ Large spills: use a non-combustible material like vermiculite, sand, or earth to soak up the product and place into a container for later disposal.</li> <li>▪ For waste disposal, see Section 13 of this SDS.</li> </ul> |

## 7. Handling and storage

- |                 |   |
|-----------------|---|
| <b>Handling</b> | <ul style="list-style-type: none"> <li>▪ Avoid contact with eyes and prolonged or repeated contact with skin.</li> <li>▪ Pregnant women should not work with the product, if there is any risk of exposure.</li> <li>▪ Keep away from heat, spark, open flames, and other sources of ignition.</li> <li>▪ Wash hands after handling and before eating.</li> </ul> |
|-----------------|---|

- Observe good hygiene practices.
- HMIS®: Health: 1, Flammability: 2, Physical hazards: 0.

**Storage and incompatibilities**

- Follow rules for flammable liquids.
- Keep away from heat, sparks, and open flame.
- Keep in a cool, well-ventilated place.
- Keep away from food, drink, and animal feeding materials.
- Keep away from incompatible materials: water reactive materials and strong oxidizing agents (Section 10).
- Store locked up.

## 8. Exposure controls / personal protection

### Occupational exposure limits

| Components                 | Limit Type | OSHA PEL | ACGIH TLV | NIOSH REL         |
|----------------------------|------------|----------|-----------|-------------------|
| Heptane<br>(CAS 142-82-5)  | STEL       | None     | 500 ppm   | 440 ppm           |
|                            | TWA        | 500 ppm  | 400 ppm   | 85 ppm            |
| n-Hexane<br>(CAS 110-54-3) | TWA        | 500 ppm  | 50 ppm    | 50 ppm            |
| Octane<br>(CAS 111-65-9)   | STEL       | 375 ppm  | None      | 385 ppm (Ceiling) |
|                            | TWA        | 500 ppm  | 300 ppm   | 75 ppm            |

**Notes:** PEL=permissible exposure limit; ppm=parts per million; REL=recommended exposure limit; TVL=threshold limit value; TWA=time-weighted average. \* Limits contained in 29 CFR 1910.1000 Z-2 may apply. All values are based on 2012 standards.

**Recommended monitoring** Follow standard monitoring procedures per established OSHA or NIOSH methods.

- Engineering controls**
- Provide adequate ventilation and minimize the risk of inhalation of vapors.
  - Provide easy access to water supply and eye wash facilities.
  - Use explosion-proof equipment.

**Personal protective equipment**

Eye/face protection:

- Risk of contact: wear safety glasses with side shields (or goggles).

Skin protection:

- Risk of contact: wear appropriate chemical resistant clothing to prevent any possibility of skin contact.

Respiratory protection:

- An approved respirator must be worn if engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established).
- Respirators do not protect against a potentially flammable environment; appropriate precautions must be taken in potentially explosive environments.

- Industrial hygienists should monitor personal exposure to determine the need for a respirator.

**General hygiene**

- When using, do not eat, drink, or smoke.
- Wash hands after handling.
- Launder contaminated clothing before reuse.
- Private clothes and working clothes should be kept separate.
- Handle in accordance with good hygiene and safety practice.
- Observe any medical surveillance requirements.

## 9. Physical and chemical properties

|  |   |
|--|---|
| Physical state   | Liquid                                      |
| Form   | Liquid                                      |
| Color  | Colorless to brown                          |
| Odor   | Hydrocarbon                                 |
| Odor threshold   | Not available                               |
| pH   | 4.3–6.8                                     |
| Melting point / freezing point                           | -15–32°F (-26.1–0°C)                        |
| Initial boiling point                                    | 212°F (100°C)                               |
| Boiling range  | Not available                               |
| Flash point  | 84–210°F (28.9–98.9°C)                      |
| Evaporation rate   | Not available                               |
| Flammability (solid, gas)                                | Not available                               |
| Flammability limits in air, lower to upper (% by volume) | Not available                               |
| Vapor pressure   | 0.1–1.8 psi (Reid Vapor Pressure at 100°F). |
| Vapor density  | Not available                               |
| Relative density   | 1.01–1.08                                   |
| Solubility(water)  | Soluble                                     |
| Partition coefficient (n-octanol/water)                  | Not available                               |
| Auto-ignition temperature                                | Not applicable                              |
| Pour point   | Not available                               |
| Viscosity  | Not available                               |
| Oxidizing properties                                     | Not available                               |
| Explosive properties                                     | Not available                               |
| Decomposition temperature                                | Not applicable                              |

## 10. Stability and reactivity

|   |   |
|---|---|
| <b>Reactivity</b>                         | Not available.  |
| <b>Chemical stability</b>                 | Material is stable under normal conditions.   |
| <b>Possibility of hazardous reactions</b> | Hazardous polymerization does not occur.  |
| <b>Conditions to avoid</b>                | <ul style="list-style-type: none"> <li>▪ Excessive heat.</li> <li>▪ Contact with incompatible materials.</li> </ul> |
| <b>Incompatible materials</b>             | <ul style="list-style-type: none"> <li>▪ Water reactive materials.</li> <li>▪ Strong oxidizing agents.</li> </ul>   |
| <b>Hazardous decomposition products</b>   | <ul style="list-style-type: none"> <li>▪ None known.</li> </ul>   |

## 11. Toxicological information

### Toxicological data

| Component                     | Species | Test Results       |
|-------------------------------|---------|--------------------|
| <b>Decane (CAS 124-18-5)</b>  |         |                    |
| Acute<br><i>Inhalation</i>    |         |                    |
| LC50                          | Mouse   | 72.3 mg/L, 2 hours |
| <b>Heptane (CAS 142-82-5)</b> |         |                    |
| Acute<br><i>Inhalation</i>    |         |                    |
| LC50                          | Rat     | 103 mg/L, 4 hours  |
| <b>Octane (CAS 111-65-9)</b>  |         |                    |
| Acute<br><i>Inhalation</i>    |         |                    |
| LC50                          | Rat     | 118 mg/L, 4 Hours  |

**Notes:** LC50=half maximal lethal concentration; mg/L-milligrams per liter.

|                           |  |
|---------------------------|--|
| <b>Routes of exposure</b> | <ul style="list-style-type: none"> <li>▪ Absorption</li> <li>▪ Eye contact</li> <li>▪ Inhalation of vapor</li> </ul> |
|---------------------------|--|

|  |   |
|--|---|
| <b>Toxicological effects</b>               | Occupational exposure to the substance or mixture may cause adverse effects.<br>Acute toxicity: <ul style="list-style-type: none"><li>▪ Skin irritation.</li><li>▪ Ingestion may cause irritation and malaise.</li></ul> Chronic effects: <ul style="list-style-type: none"><li>▪ Can cause kidney, liver, and central nervous system damage.</li><li>▪ Prolonged or repeated contact with skin may cause redness, itching, irritation, eczema/chapping, and oil acne.</li><li>▪ Contains n-hexane, prolonged or repeated exposures to which may cause damage to the peripheral nervous system (e.g., fingers, feet, and arms).</li></ul> |
| <b>Skin corrosion/irritation</b>           | Irritating to skin.   |
| <b>Serious eye damage / eye irritation</b> | Not classified.   |
| <b>Sensitization</b>                       | Not a skin sensitizer.  |
| <b>Local effects</b>                       | <ul style="list-style-type: none"><li>▪ May cause eye irritation.</li><li>▪ May produce skin irritation or contact dermatitis.</li></ul>  |
| <b>Mutagenicity</b>                        | Not classified.   |
| <b>Carcinogenicity</b>                     | Not classified.   |
| <b>Reproductive toxicity</b>               | Suspected of damaging fertility.  |
| <b>Symptoms</b>                            | <ul style="list-style-type: none"><li>▪ May cause redness and pain.</li><li>▪ May cause eye irritation on direct contact.</li></ul>   |
| <b>Epidemiology</b>                        | No data available.  |
| <b>Absorption hazard</b>                   | Not classified.   |

## 12. Ecological information

### Ecological data

| Components            | Dose | Species   | Test Results   |
|-----------------------|------|---|----------------|
| Decane (CAS 124-18-5) |      |   |                |
| Fish                  | LC50 | Sheepshead minnow<br>( <i>Cyprinodon variegatus</i> ) | >500 mg/L, 96h |



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| Components                     | Dose | Species   | Test Results          |
|--------------------------------|------|---|-----------------------|
| <b>Heptane (CAS 142-82-5)</b>  |      |   |                       |
| Fish                           | LC50 | Mozambique tilapia<br>( <i>Tilapia mossambica</i> ) | 375 mg/L, 96h         |
| <b>n-Hexane (CAS 110-54-3)</b> |      |   |                       |
| Fish                           | LC50 | Fathead minnow<br>( <i>Pimephales promelas</i> )    | 2.101–2.981 mg/L, 96h |

**Notes:** LC50=half maximal lethal concentration; mg/L-milligrams per liter.

**Ecotoxicity** Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

**Environmental effects** Toxic to aquatic life with long lasting effects.

**Persistence and degradability** Expected to be inherently biodegradable.

**Bioaccumulative potential** Has the potential to bioaccumulate.

#### Partition coefficient (n/octanol/water [ $\log K_{ow}$ ])

|                         |      |
|-------------------------|------|
| n-Hexane (CAS 110-54-3) | 3.9  |
| Heptane (CAS 142-82-5)  | 4.66 |
| Decane (CAS 124-18-5)   | 5.01 |
| Octane (CAS 111-65-9)   | 5.18 |

**Mobility in soil** This product mostly contains water, which has a high mobility in soil. The organic components, however, have varying degrees of mobility:

- Decane, octane, and heptane have high koc values and are immobile or have low mobility in soil.
- n-Hexane has a low koc value and is considered to have high mobility in soil.

#### Soil organic carbon-water partition coefficient (koc)

|                         |               |
|-------------------------|---------------|
| n-Hexane (CAS 110-54-3) | 130           |
| Heptane (CAS 142-82-5)  | 8,200         |
| Octane (CAS 111-65-9)   | 16,000        |
| Decane (CAS 124-18-5)   | 22,200–42,700 |

**Water solubility** The product is water soluble; however, the alkane components are considered hydrophobic and have a very low water solubility.

**Other adverse effects** None known.

### 13. Disposal considerations

|  |  |
|--|--|
| <b>Disposal methods</b>                      | Dispose of in accordance with all applicable regulations.  |
| <b>Local disposal regulations</b>            | Dispose of in accordance with all applicable regulations.  |
| <b>Waste from residues / unused products</b> | Dispose of in accordance with local regulations.   |
| <b>Contaminated packaging</b>                | Empty containers should be sent to an approved handling site for recycling, recovery, or disposal. |

### 14. Transport information

#### DOT

|  |  |
|--|--|
| <b>UN number</b>                               | UN1267   |
| <b>UN proper shipping name</b>                 | Petroleum crude oil, Marine pollutant                                    |
| <b>Transport hazard class(es)</b>              | 3  |
| <b>Packing group</b>                           | III  |
| <b>Environmental hazards: Marine pollutant</b> | Yes  |
| <b>Labels required</b>                         | 3  |
| <b>Special provisions</b>                      | 144, 357, B1, IB3, T2, TP1   |
| <b>Packaging exceptions</b>                    | 150  |
| <b>Packaging non bulk</b>                      | 203  |
| <b>Packaging bulk</b>                          | 242  |
| <b>Special precautions for user</b>            | Read safety instructions, SDS, and emergency procedures before handling. |

#### IATA

|                                     |                     |
|-------------------------------------|---------------------|
| <b>UN number</b>                    | UN1267              |
| <b>UN proper shipping name</b>      | Petroleum crude oil |
| <b>Transport hazard class(es)</b>   | 3                   |
| <b>Packaging group</b>              | III                 |
| <b>Environmental hazards</b>        | Not available.      |
| <b>Labels required</b>              | Not available       |
| <b>ERG Code</b>                     | Not available       |
| <b>Special precautions for user</b> | Not available       |

## IMDG

|  |                     |
|--|---------------------|
| UN number  | UN1267              |
| UN proper shipping name  | Petroleum Crude Oil |
| Transport hazard class(es)   | 3                   |
| Packaging group  | III                 |
| Environmental hazards: Marine pollutant                                  | Yes                 |
| Labels required  | 3                   |
| EmS  | F-E, S-E            |
| Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable      |
| General information  | Not applicable      |

## 15. Regulatory information

**US federal regulations** This product is not a hazardous chemical.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001–1050)** None.

**CERCLA (Superfund) reportable quantity**

|                         |            |
|-------------------------|------------|
| n-Hexane (CAS 110-54-3) | 5,000 lbs  |
| Heptane (CAS 142-82-5)  | Not listed |
| Octane (CAS 111-65-9)   | Not listed |
| Decane (CAS 124-18-5)   | Not listed |

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**

- Immediate Hazard: Yes
- Delayed Hazard: Yes
- Fire Hazard: Yes
- Pressure Hazard: No
- Reactivity Hazard: No
- SARA 302 Extremely hazardous substance: No
- SARA 311/312 hazardous chemicals: No

## International Inventories

| Country(s) or region | Inventory name  | On inventory (Yes/No)* |
|----------------------|---|------------------------|
| Australia            | Australian Inventory of Chemical Substances (AICS)            | Yes                    |
| Canada               | Domestic Substances List (DSL)                                | Yes                    |
| Canada               | Non-Domestic Substances List (NDSL)                           | No                     |
| China                | Inventory of Existing Chemical Substances in China (IECSC)    | Yes                    |
| Europe               | European Inventory of Existing Commercial Chemical Substances | Yes                    |

| Country(s) or region | Inventory name  | On inventory (Yes/No)* |
|----------------------|---|------------------------|
|                      | (EINECS)  |                        |
| Europe               | European List of Notified Chemical Substances (ELINCS)            | No                     |
| Japan                | Inventory of Existing and New Chemical Substances (ENCS)          | Yes                    |
| Korea                | Existing Chemicals List (ECL)                                     | Yes                    |
| New Zealand          | New Zealand Inventory   | Yes                    |
| Philippines          | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes                    |
| US & Puerto Rico     | Toxic Substances Control Act (TSCA) Inventory                     | Yes                    |

**Notes:** \*A Yes indicates this product complies with the inventory requirements administered by the governing country(s).

## 16. Other information, including date of preparation or last version

**Issue date** 07/31/2013

**Revision date:** 07/31/2016

**Version #** 01

**References** IARC Monographs. Overall Evaluation of Carcinogenicity (Volumes 1–102)  
IUCLID. Hazardous Substances Data Bank.

**Disclaimer** This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.