

SAFETY DATA SHEET

1. Identification

Identification

Product name: IN-Force OW

Additional identification

Chemical name: Mixture

Recommended use and restriction on use

Recommended use: WEC Drilling
Restrictions on use: None identified.

Details of the supplier of the safety data sheet

Supplier

Company Name: Valence Drilling Fluids, LLC
Address: 2575 Kelly Pointe Parkway
SUITE 120
Edmond, Ok 73013
Telephone: US
(405) 285-6454

Emergency telephone number:

FOR TRANSPORT EMERGENCY CALL CHEMTREC (+1) 7035273887

2. Hazard(s) identification

Hazard Classification

Physical Hazards

Flammable liquids Category 4

Health Hazards

Serious Eye Damage/Eye Irritation Category 2B

Carcinogenicity Category 2

Aspiration Hazard Category 1

Unknown toxicity

Acute toxicity, oral	9.6 %
Acute toxicity, dermal	9.6 %
Acute toxicity, inhalation, vapor	87.7 %
Acute toxicity, inhalation, dust or mist	83.6 %

Label Elements:

Hazard Symbol:



Signal Word:

Danger

Hazard Statement: Combustible liquid.
 Causes eye irritation.
 Suspected of causing cancer.
 May be fatal if swallowed and enters airways.

Precautionary Statement:

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Avoid release to the environment.

Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting. If exposed or concerned: Get medical advice/attention. In case of fire: Use CO2, dry chemical or foam for extinction. Water can be used to cool and protect exposed material.

Storage: Store in well-ventilated place. Keep cool. Store locked up.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: None identified.

3. Composition/information on ingredients

Chemical name	CAS number	Percent by Weight
Calcium sulfonate	Confidential	5 - 10%
Diesel fuel	68334-30-5	5 - 10%
Diesel fuel	68476-30-2	5 - 10%
Kerosene	64742-81-0	5 - 10%
Kerosene	8008-20-6	5 - 10%
2-Ethylhexanol	104-76-7	1 - 5%
Anthraquinone	84-65-1	0.1 - 0.5%

Trade secret information: A specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

General information: IF exposed or concerned: Get medical advice/attention.

Ingestion:	Do NOT induce vomiting. Aspiration of material due to vomiting can cause chemical pneumonitis which can be fatal. If vomiting occurs naturally, the casualty should lean forward to reduce the risk of aspiration. Rinse mouth. Immediately call a POISON CENTER/doctor/...
Inhalation:	Remove exposed person to fresh air if adverse effects are observed.
Skin Contact:	Take off contaminated clothing and wash before re-use. Wash with soap and water. If skin irritation occurs, get medical attention.
Eye contact:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Most important symptoms/effects, acute and delayed

Symptoms: Symptoms may be delayed.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. Fire-fighting measures

General Fire Hazards: Move containers from fire area if you can do so without risk.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: CO₂, Dry chemical or Foam. Water can be used to cool and protect exposed material.

Unsuitable extinguishing media: Not determined.

Specific hazards arising from the chemical: Vapors may cause a flash fire or ignite explosively. Prevent buildup of vapors or gases to explosive concentrations. Vapors may travel considerable distance to a source of ignition and flash back. Water may cause splattering. Container may rupture on heating. When heated, hazardous gases may be released including: sulfur dioxide. See section 10 for additional information.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Methods and material for containment and cleaning up:

Eliminate all ignition sources if safe to do so. Dike far ahead of larger spill for later recovery and disposal. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material. Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas.

Environmental Precautions:

Avoid release to the environment. Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

7. Handling and storage
Precautions for safe handling:

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid contact with eyes. Observe good industrial hygiene practices. Provide adequate ventilation. Use personal protective equipment as required. Wash hands thoroughly after handling. Launder contaminated clothing before reuse. Avoid environmental contamination.

Maximum Handling Temperature:

Not determined.

Conditions for safe storage, including any incompatibilities:

Keep cool. Store in a well-ventilated place. Do not store near potential sources of ignition.

Maximum Storage Temperature:

Not determined.

8. Exposure controls/personal protection
Control Parameters:
Occupational Exposure Limits

Chemical name	type	Exposure Limit Values	Source
Kerosene - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m ³	US. ACGIH Threshold Limit Values (02 2012)
Kerosene	REL	100 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
Diesel fuel - Inhalable fraction and vapor. - as total hydrocarbons	TWA	100 mg/m ³	US. ACGIH Threshold Limit Values (02 2012)
Kerosene - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m ³	US. ACGIH Threshold Limit Values (02 2012)
Kerosene	REL	100 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
Diesel fuel - Inhalable fraction and vapor. - as total hydrocarbons	TWA	100 mg/m ³	US. ACGIH Threshold Limit Values (02 2012)

Appropriate engineering controls:

No special requirements under ordinary conditions of use and with adequate ventilation. Adequate ventilation should be provided so that exposure limits are not exceeded.

Individual protection measures, such as personal protective equipment

General information:	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory and eye protection may be needed in special circumstances, such as poorly ventilated spaces, heating, evaporation of liquids from large surfaces, spraying of mists, mechanical generation of dusts, drying of solids, etc.
Eyeface protection:	Safety glasses. If potential for splash or mist exists, wear chemical goggles or faceshield.
Skin Protection	
Hand Protection:	Use nitrile or neoprene gloves. Use good industrial hygiene practices. In case of skin contact, wash hands and arms with soap and water. Use nitrile or neoprene gloves. Use good industrial hygiene practices. In case of skin contact, wash hands and arms with soap and water. Chemical resistant gloves
Other:	Wear apron or protective clothing in case of contact. Chemical resistant boots. Gloves, coveralls, apron, boots as necessary to minimize contact.
Respiratory Protection:	A respiratory protection program compliant with all applicable regulations must be followed whenever workplace conditions require the use of a respirator. Under normal use conditions, respirator is not usually required. Use appropriate respiratory protection if exposure to dust particles, mist or vapors is likely. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas and for large spill clean-up sites. Use respirator if irritation is experienced or if the recommended exposure limit is exceeded. Use respirator with a combination organic vapor and dust/mist cartridge.
Hygiene measures:	Observe good industrial hygiene practices. When using do not smoke. Wash hands before breaks and immediately after handling the product.

9. Physical and chemical properties

Appearance

Physical state:	liquid
Form:	liquid
Color:	Dark brown to black
Odor:	Hydrocarbon
Odor threshold:	No data available.
pH:	No data available.
Freezing point:	No data available.
Boiling Point:	320 °F (160 °C)
Flash Point:	158.9 °F (70.5 °C) (PMCC)
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.

Vapor pressure:	> 1.33 hPa
Vapor density:	29.92
Relative density:	0.92 60.1 °F (15.6 °C)
Solubility(ies)	
Solubility in water:	Completely Soluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

Other information

Bulk density:	10.59 - 10.93 kg/m3
Pour Point Temperature:	< 50 °F (10 °C)

10. Stability and reactivity

Reactivity:	No data available.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Will not occur.
Conditions to avoid:	Heat, sparks, flames.
Incompatible Materials:	Reducing agents. Strong oxidizing agents. Strong alkalis.
Hazardous Decomposition Products:	Thermal decomposition or combustion may generate smoke, carbon monoxide, carbon dioxide, and other products of incomplete combustion.

11. Toxicological information

Information on likely routes of exposure

Inhalation:	No data available.
Ingestion:	No data available.
Skin Contact:	Causes mild skin irritation.
Eye contact:	Causes eye irritation.

Information on toxicological effects

Acute toxicity

Oral

Product:	ATEmix > 10,000 mg/kg. Swallowing material may cause irritation of the gastrointestinal lining, nausea, vomiting, diarrhea, and abdominal pain. Ingestion can cause central nervous system effects such as headache, dizziness, drowsiness, and generalized weakness.
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Dermal

Product:	Not classified for acute toxicity based on available data.
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Inhalation

Product:

ATEmix (, 4 h): 10 - 20 mg/l. Dusts, mists and fumes
 High concentrations may cause headaches, dizziness, nausea, behavioral changes, weakness, drowsiness and stupor. High concentrations may cause headaches, dizziness, fatigue, nausea, vomiting, drowsiness, stupor, other central nervous system effects leading to visual impairment, respiratory failure, unconsciousness and death.

Skin Corrosion/Irritation:

Product:

Causes mild skin irritation.
 Remarks: Prolonged or repeated contact may cause irritation. Prolonged and repeated exposure causes defatting and cracking of the skin. Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, and cracking of the skin.

Serious Eye Damage/Eye Irritation:

Product:

Remarks: Causes eye irritation.

Respiratory sensitization:

No data available

Skin sensitization:

Kerosene

(Supplier information) May cause skin sensitization in sensitive individuals.

2-Ethylhexanol

Classification: Not a skin sensitizer. (Literature)

Specific Target Organ Toxicity - Single Exposure:

Diesel fuel

May cause irritation to the mucous membranes and upper respiratory tract.

Diesel fuel

May cause irritation to the mucous membranes and upper respiratory tract.

Kerosene

May cause irritation to the mucous membranes and upper respiratory tract.

Kerosene

May cause respiratory irritation.

2-Ethylhexanol

Respiratory tract irritation.

Aspiration Hazard:

Product:

May be fatal if swallowed and enters airways.

Other effects:

Kerosene

Central Nervous System impairment Skin irritation Upper Respiratory Tract irritation

Kerosene

Skin Central nervous system

Chronic Effects

Carcinogenicity:

Product:	Lifetime skin painting studies with products similar to kerosene have produced skin tumors or skin cancer in laboratory mice. Butyl cellosolve: A National Toxicology Program (NTP) chronic inhalation study revealed some evidence of carcinogenic activity in male and female mice, equivocal evidence in female rats. and no evidence in male rats.
Diesel fuel	Lifetime skin painting studies with products similar to kerosene have produced skin tumors or skin cancer in laboratory mice.
Kerosene	Lifetime skin painting studies with products similar to kerosene have produced skin tumors or skin cancer in laboratory mice.
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IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Anthraquinone	Overall evaluation: 2B. Possibly carcinogenic to humans.
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US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity:

2-Ethylhexanol	This material has not exhibited mutagenic or genotoxic potential in laboratory tests.
Kerosene	The American Petroleum Institute tested kerosene in several in vitro and in vivo genotoxicity assays. Although isolated assays gave a positive result there was generally no convincing evidence that kerosene is genotoxic.
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Reproductive toxicity:

Kerosene	Kerosene was shown to have no teratogenic activity in rats exposed by inhalation at 365 ppm in a study performed by the American Petroleum Institute.
Kerosene	Kerosene was shown to have no teratogenic activity in rats exposed by inhalation at 365 ppm in a study performed by the American Petroleum Institute.

2-Ethylhexanol

No evidence of adverse effects were found in a developmental toxicity study of 2-ethylhexanol in rats. Doses up to 3 ml/kg applied to the skin during the most critical part of the gestation period produced evidence of toxicity to mothers, but no evidence of injury in the developing offspring. In a previous study, birth defects were observed by oral administration, an unlikely route of exposure in the workplace.

Specific Target Organ Toxicity - Repeated Exposure:

Diesel fuel	Unknown: Target Organ(s): Kidney Repeated and prolonged overexposure to diesel fuel may cause degenerative changes in the liver, kidneys, and bone marrow.
Diesel fuel	Unknown: Target Organ(s): Central nervous system.
Kerosene	Unknown: Target Organ(s): Central nervous system., bone marrow, Kidney, Liver
Kerosene	Prolonged and repeated overexposure to kerosene and similar petroleum distillates may cause degenerative changes in the liver, kidneys, and bone marrow.
2-Ethylhexanol	Repeated overexposure may result in liver and kidney damage. A 14-day dermal toxicity study of 2-ethylhexanol in rats showed blood effects, decreased spleen weight and decreased triglycerides. Unknown: Target Organ(s): Blood, Liver, Spleen., Kidney

12. Ecological information

Ecotoxicity

Fish

Kerosene	LC 50 (Not reported, 4 d): > 100 mg/l
Kerosene	LC 50 (Golden Orfe, 4 d): > 100 mg/l
2-Ethylhexanol	LC 50 (Fathead Minnow, 4 d): 28.2 mg/l LC 50 (Golden Orfe, 4 d): 17.1 mg/l NOEC (Golden Orfe, 4 d): 14 mg/l

Aquatic Invertebrates

Kerosene	EC 50 (Water flea (Daphnia magna), 2 d): > 1,000 mg/l
2-Ethylhexanol	EC 50 (Water flea (Daphnia magna), 2 d): 39 mg/l

Toxicity to Aquatic Plants

Kerosene	EC 50 (Alga, 4 d): > 1,000 mg/l
2-Ethylhexanol	EC 50 (Green algae (Scenedesmus quadricauda), 3 d): 16.6 mg/l

Toxicity to soil dwelling organisms

No data available

Sediment Toxicity

No data available

Toxicity to Terrestrial Plants

No data available

Toxicity to Above-Ground Organisms

No data available

Toxicity to microorganisms

2-Ethylhexanol

EC 50 (Pseudomonas putida, 0.1 d): 540 mg/l

EC 50 (Sludge, 0.5 d): > 100 mg/l

Persistence and Degradability
Biodegradation

Kerosene

OECD TG 301 F, 63 %, 28 d, Readily biodegradable

Kerosene

OECD TG 301 F, 63 %, 28 d, Readily biodegradable

2-Ethylhexanol

OECD TG 302 B, 95 %, 5 d, Readily biodegradable

OECD TG 301 C, 100 %, 14 d, Readily biodegradable

Bioaccumulative Potential
Bioconcentration Factor (BCF)

2-Ethylhexanol

Bioconcentration Factor (BCF): 25.35 (calculated)

Partition Coefficient n-octanol / water (log Kow)

2-Ethylhexanol

Log Kow: 2.9 (Measured)

Mobility:

2-Ethylhexanol

soil - 1.42

Other Adverse Effects:

No data available.

13. Disposal considerations
Disposal instructions:

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Dispose of packaging or containers in accordance with local, regional, national and international regulations. Empty container contains product residue which may exhibit hazards of product.

Contaminated Packaging:

Container packaging may exhibit hazards.

14. Transport information
DOT

UN Number:

NA 1993

UN Proper Shipping Name:

Combustible liquid, n.o.s.(Kerosene, Diesel fuel)

Transport Hazard Class(es)

Class:

3

Label(s):

NONE

Packing Group:

III

Marine Pollutant:

No

Special precautions for user:

None established

IMDG

Not regulated.

IATA

Not regulated.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

None known.

The DOT shipping information in this section is based on a bulk container. Please review the accompanying shipping papers for the correct shipping descriptions based the size of the package. Shipping descriptions may vary based on mode of transport, quantities, temperature of the material, package size, and/or origin and destination. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material. During transportation, steps must be taken to prevent load shifting or materials falling, and all relating legal statutes should be obeyed. Review classification requirements before shipping materials at elevated temperatures.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Chemical Identity

Anthraquinone

Reportable quantity

De minimis concentration: 0.1%

CERCLA Hazardous Substance List (40 CFR 302.4)

None present or none present in regulated quantities.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 311 Classifications

Fire Hazard

Immediate (Acute) Health Hazards

Delayed (Chronic) Health Hazard

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

<u>Chemical Identity</u>	<u>CAS number</u>	<u>Percent by Weight</u>	<u>Reportable quantity</u>
Butyl cellosolve	111-76-2	0.4 %	*See regulation for further details
Diethylene glycol monobutyl ether	112-34-5	0.4 %	*See regulation for further details

*These specific chemicals are not listed please check the generic entries on the SARA 304 listings for applicability.

SARA 313 (TRI Reporting)

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

Anthraquinone

0.103%

Naphthalene

821.00PPB

Inventory Status

Australia (AICS)

This product contains a substance that is not listed on the Australia Inventory of Chemical Substances.

Canada (DSL/NDL)

All components are in compliance with the Canadian Environmental Protection Act and are present on the Domestic Substances List.

China (IECSC)

This product contains a substance that is not listed on the Chinese Inventory of Existing Chemical Substances (IECSC).

European Union (REACH)

To obtain information on the REACH compliance status of this product, please e-mail REACH@SDSInquiries.com.

Japan (ENCS)

This product contains a substance that is not listed on the Japanese Existing and New Chemical Substances (ENCS) list.

Korea (ECL)

This product requires notification before sale in Korea.

New Zealand (NZIoC)

This product requires notification before sale in New Zealand.

Philippines (PICCS)

This product requires notification before sale in the Philippines.

Switzerland (SWISS)

This product contains a substance that is not listed on the Switzerland Inventory of Notified New Substances.

Taiwan (TCSCA)

This product requires notification before sale in Taiwan.

United States (TSCA)

All components of this material are on the US TSCA Inventory.

The information that was used to confirm the compliance status of this product may deviate from the chemical information shown in Section 3.

16. Other information, including date of preparation or last revision
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HMIS Hazard ID

Health	*	1
Flammability	2	
Physical Hazards	0	

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; *Chronic health effect

NFPA Hazard ID


Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date: 03/24/2016

Version #: 2.0

Source of information: Internal company data and other publically available resources.



Further Information:

Contact supplier (see Section 1)

Disclaimer:

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state, and local regulations remains the responsibility of the user.