

# SAFETY DATA SHEET

Regulation (EC) No 1907/2006 (REACH), Article 31

Revision date: 19-Oct-2020

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

### 1.1. Product Identifier

**Product code:** KFORMSOL

**Product name:** Potassium Formate Solution  
**REACH Registration Number:** See Section 3

**Synonyms:** KFormate; Formic acid, potassium salt

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Recommended use:** Drilling & completion fluids, Industrial Products

**Uses advised against:** No information available.

### 1.3. Details of the supplier of the safety data sheet

Sinomine Specialty Fluids  
Ocean House  
Hareness Circle  
Altens Industrial Estate  
Aberdeen AB12 3LY  
SCOTLAND  
Tel: (+44) 1224-897229  
Fax: (+44) 1224-870089  
E-mail:  
[enquire@sinominecorp.com](mailto:enquire@sinominecorp.com)

**E-mail address:** [enquire@sinominecorp.com](mailto:enquire@sinominecorp.com)

### 1.4. Emergency telephone number

**Emergency Telephone Number:** 24H/7d service - Reference Access code: 335324

VERISK Europe: +44 8 08 189 0979  
VERISK UK: 0 800 680 0425  
VERISK US: +1 760 476 3961

## 2. HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

Not a hazardous substance according to Regulation (EC) 1272/2008 (CLP), its various amendments and adaptations.

**2.2. Label Elements****Pictogram:**

None

**Signal Word:**

None

**Hazard statements:**

None

**Precautionary statements:**

None

**2.3. Other Hazards**

None.

<b>Principle Routes of Exposure:</b>	Inhalation, Eye contact, Skin Contact
<b>Eye Contact:</b>	May cause irritation. Avoid contact with eyes.
<b>Skin Contact:</b>	May cause irritation. Avoid contact with skin.
<b>Inhalation:</b>	Due to its liquid state, this material is not expected to be a significant inhalation hazard. Aerosols or dried product may be irritating to respiratory tract. Do not breathe dust.
<b>Ingestion:</b>	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
<b>Carcinogenicity:</b>	Does not contain any substances listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), ACGIH (American Conference of Governmental Industrial Hygienists) or EU (European Union). See also Section 11.
<b>Target Organ Effects:</b>	Respiratory system, Eyes, Skin
<b>Medical Conditions Aggravated by Exposure:</b>	None reasonably foreseeable under normal use
<b>Potential Environmental Effects:</b>	None known. See also Section 12.

**3. COMPOSITION/INFORMATION ON INGREDIENTS****3.1 Substances**

Chemical name	EC No	CAS No	weight-%	Classification according to Directive 67/548/EEC or 1999/45/EC	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH registration number

Potassium formate	209-677-9	590-29-4	70-76	-	-	01-2119486456-26
Water	231-791-2	7732-18-5	24-30	-	-	*
Carbonate and bicarbonate salts of sodium and/or potassium	Various	VARIOUS	0-5	-	-	Various

**Additional Information**

\* Exempt

**Other Information:**

The hyphen (-) means "not applicable"

Potassium Formate may contain up to 3% of "other alkali formates" as impurities resulting from the production process. Those alkali formates are not intentionally added in our potassium formate brine but are part of our substance "Potassium Formate" (per the definition of a substance in National Chemical Substance Control Law) and cannot be removed from the material. Those impurities have been tested as part of our product.

## 4. FIRST AID MEASURES

**4.1. Description of first aid measures****Skin Contact**

Wash thoroughly with soap and water. Seek medical attention if symptoms develop.

**Eye contact**

Flush eyes immediately with large amounts of water for 15 minutes. Seek medical attention if symptoms develop.

**Inhalation**

If cough, shortness of breath or other breathing problems occur, move to fresh air. Seek medical attention if symptoms persist. If necessary, restore normal breathing through standard first aid measures.

**Ingestion**

Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.

**4.2. Most important symptoms and effects, both acute and delayed****Symptoms:**

The most important known symptoms and effects are described in Section 2 and/or in Section 11.

**4.3. Indication of any immediate medical attention and special treatment needed****Note to physicians:**

Treat symptomatically.

## 5. FIRE-FIGHTING MEASURES

**5.1. Extinguishing media****Suitable Extinguishing Media:**Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use foam, carbon dioxide (CO<sub>2</sub>), nitrogen (N<sub>2</sub>), dry chemical or water spray. A fog spray is recommended if water is used.**Unsuitable Extinguishing Media:**

None known.

## **5.2. Special hazards arising from the substance or mixture**

**Specific hazards arising from the chemical:** Burning produces irritant fumes.

**Hazardous combustion products:** Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Mixture of inorganic salts. Potassium oxides.

## **5.3. Advice for firefighters**

**Special protective equipment for fire-fighters** Wear suitable protective equipment. In the event of fire, wear self-contained breathing apparatus.

**Risk of Dust Explosion:** Not Applicable: This product is an aqueous solution.

# **6. ACCIDENTAL RELEASE MEASURES**

## **6.1. Personal precautions, protective equipment and emergency procedures**

**Personal precautions:** Avoid formation of dust and aerosols. Ensure adequate ventilation. Use personal protective equipment. See also Section 8.

**For emergency responders:** Use personal protection recommended in Section 8.

## **6.2. Environmental precautions**

**Environmental Precautions:** Contain spill if safe to do so. Local authorities should be advised if significant spillages cannot be contained. See also Section 13.

## **6.3. Methods and material for containment and cleaning up**

**Methods for containment:** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up:** Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. See Section 13.

## **6.4. Reference to other sections**

**Reference to other sections** See section 8 for more information. See section 13 for more information.

# **7. HANDLING AND STORAGE**

## **7.1. Precautions for safe handling**

**Advice on safe handling:** Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Do not breathe aerosols or dust from dried material. Provide appropriate exhaust ventilation at machinery and at places where dust, aerosol, or mist can be generated.

**General hygiene considerations:** Handle in accordance with good industrial hygiene and safety practice.

## **7.2. Conditions for safe storage, including any incompatibilities**

**Storage Conditions:** Keep in properly labeled containers. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep at temperatures above 0°C. Protect from sunlight. Do not store together with strong oxidizing agents.

**Incompatible materials:** Strong oxidizing agents.

### 7.3. Specific end use(s)

**Risk Management Measures (RMM)** Per Article 14.4 of the REACH Regulation no exposure scenario has been developed as the substance is not hazardous.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

**Exposure Limits** There are no exposure limits identified for this product.

**Derived No Effect Level (DNEL)** No DNELs have been derived for this mixture

Potassium Formate  
 DN(M)EL - systemic effects - dermal: 6175 mg/kg bw/day  
 DN(M)EL - local effects - dermal: 20.6 mg/cm<sup>2</sup>  
 DN(M)EL - systemic effects -inhalation: 435 mg/m<sup>3</sup>

**Predicted No Effect Concentration (PNEC)** Not Applicable.

### 8.2. Exposure controls

**Engineering Controls:** Ensure adequate ventilation to minimize exposures. Provide appropriate exhaust ventilation at machinery and at places where dust, aerosol, or mist can be generated.

#### **Personal protective equipment [PPE]**

**Respiratory Protection:** Approved respirator may be necessary if local exhaust ventilation is not adequate.

**Hand Protection:** Wear suitable gloves (tested to EN374). Nitrile rubber gloves. PVC or rubber gloves.

**Eye/face Protection:** Wear eye/face protection. Wear safety glasses with side shields (or goggles). Wear face-shield if splashes are likely to occur.

**Skin and Body Protection:** Wear chemical impervious protective clothing if skin contact may occur.

**Other:** Handle in accordance with good industrial hygiene and safety practice. Emergency eyewash and safety shower should be located nearby.

**Environmental exposure controls:** No information available.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Liquid	<b>Odor:</b>	None.
<b>Appearance:</b>	No information available	<b>Odor threshold:</b>	No information available
<b>Color:</b>	Light yellow		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
<b>pH:</b>	6.5-11	

<b>Melting point/freezing point:</b>		No information available
<b>Boiling point / boiling range:</b>	134 - 140 °C	
<b>Evaporation Rate:</b>	< 0	@ 20 °C
<b>Vapor pressure:</b>	575-700 Pa	
<b>Vapor Density:</b>		No information available
<b>Density:</b>		No information available
<b>Bulk Density:</b>		No information available
<b>Specific Gravity at 20°C:</b>	1.53-1.57 g/cm <sup>3</sup>	
<b>Water solubility:</b>	76.8% @ 20°C	
<b>Solubility(ies):</b>		No information available
<b>Partition Coefficient (n-octanol/water):</b>	< 0	No potential to bioconcentrate
<b>Decomposition temperature:</b>	360 °C	
<b>Viscosity:</b>	7 - 13 cP	@ 25 °C
<b>Kinematic viscosity:</b>		No information available
<b>Dynamic viscosity:</b>		No information available
<b>Oxidizing Properties:</b>		Not Applicable
<b>Softening point:</b>		No information available
<b>VOC content (%):</b>		Not Applicable
<b>% Volatile (by Volume):</b>		No information available
<b>% Volatile (by Weight):</b>		No information available
<b>Surface Tension:</b>		No information available
<b>Explosive properties:</b>		No information available
<b>Flash Point:</b>		No information available
<b>Flammability (solid, gas):</b>		No information available
<b>Flammability Limit in Air:</b>		No information available
<b>Explosion Limits in Air - Upper (g/m<sup>3</sup>):</b>		No information available
<b>Explosion Limits in Air - Lower (g/m<sup>3</sup>):</b>		No information available
<b>Autoignition Temperature:</b>		No information available
<b>Minimum Ignition Temperature:</b>		Not Applicable
<b>Minimum Ignition Energy:</b>		Not Applicable
<b>Ignition Energy:</b>		No information available
<b>Maximum Absolute Explosion Pressure:</b>		Not Applicable
<b>Maximum Rate of Pressure Rise:</b>		Not Applicable
<b>Burn Velocity:</b>		No information available
<b>Kst Value:</b>		Not Applicable
<b>Dust Explosion Classification:</b>		Not Applicable

"No information available" indicates testing has not been performed

End point is listed "not applicable" due to the inherent properties of the substance: The product is an aqueous solution

## 10. STABILITY AND REACTIVITY

### 10.1. Reactivity

**Reactivity:** Reacts with strong oxidizing agents.

### 10.2. Chemical stability

**Stability:** Stable. Thermally decomposes above 360°C.

### Explosion data

**Sensitivity to Mechanical Impact:** None

**Sensitivity to Static Discharge:** None.

### 10.3. Possibility of hazardous reactions

**Possibility of hazardous reactions:** None under normal processing.

### 10.4. Conditions to avoid

**Conditions to avoid:** Thermal decomposition can take place above 360°C. Avoid contact with strong oxidizing agents. During long exposures to high temperatures, and in contact with certain catalysts, some liberation of gasses (H<sub>2</sub> and CO) might occur. The greatest risk exists when dry formate powder is contacted by a platinum catalyst. Users are advised to obtain the Sinomine Specialty Fluid's (SSF) Formate Technical Manual, Section A13 from a SSF representative for more detailed information on conditions to avoid. SSF does not recommend retorting formate solutions to determine solids content as temperatures may exceed 500 °C. The use of rupture disks is recommended as a precautionary measure when conducting heat aging of formate solutions at temperatures above 150 °C.

### 10.5. Incompatible materials

**Incompatible materials:** Strong oxidizing agents

### 10.6. Hazardous decomposition products

**Hazardous decomposition products:** Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Mixture of inorganic salts, Potassium oxides

## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

#### Acute toxicity

**Oral LD50:** LD50/oral/rat = 5500 mg/kg.

**Inhalation LC50:** Not determined

**Dermal LD50:** Not determined

**Skin corrosion/irritation:** No skin irritation. (similar substance).

**Serious eye damage/eye irritation:** No eye irritation. (similar substance).

**Sensitization:** Non-sensitizing. (similar substance).

**Mutagenicity:** Not mutagenic in Bacterial Reverse Mutation assay/Ames, Mammalian Chromosome Aberration Test and Mammalian Cell Gene Mutation Test (similar substance).

**Carcinogenicity:** In oral feeding studies in rats, no carcinogenicity was observed at doses up to 2000 mg/kg/day (similar substance).

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<b>Reproductive and Developmental Toxicity:</b>	In a two-generation reproduction toxicity study in rats (oral), no reproductive or developmental toxicity was observed at doses up to 1000 mg/kg/day (similar substance).
<b>STOT - single exposure:</b>	Based on available data, specific target organ toxicity is not expected after single oral, single inhalation, or single dermal exposure.
<b>STOT - repeated exposure:</b>	A subchronic oral toxicity study in rats showed a No Observed Adverse Effect Level (NOAEL) of 3877 mg/kg/day (similar substance).  Based on available data, a STOT-RE classification is not warranted.
<b>Aspiration Hazard:</b>	No information available.

## 12. ECOLOGICAL INFORMATION

### 12.1. Toxicity

#### **Aquatic Toxicity:**

##### MARINE WATER

Juvenile turbot (*Scophthalmus maximus*) LC50 (96 hr) = 1700 mg/l  
Marine algae (*Skeletonema costatum*) EbC50 (72 hr) = 3400 mg/l  
Marine copepod (*Acartia tonsa*) LC50 (48 hr) = 300 mg/l  
Brown shrimp (*Crangon crangon*) LC50 (96 hr) = 1300 mg/l

##### FRESHWATER

Peixe (*Oncorhynchus mykiss*) LC50 (96 hr) = 3500 mg/l  
Alga (*Scenedesmus subspicatus*) EbC50 (72 hr) = 1000 mg/l  
Water flea (*Daphnia magna*) EC50 (48 hr) = 540 mg/l.

#### **Other Information:**

In the majority of marine species, this material has not demonstrated toxicity and has received a Group E Rating (the highest approval rating) under the PARCOM Harmonized Offshore and Chemical Notification Format (HOCNF)

### 12.2. Persistence and degradability

READILY BIODEGRADABLE  
(Method: OECD 301D and 301E)

### 12.3. Bioaccumulative potential

Log Pow = < 0. No potential to bioconcentrate. See also Section 9.

### 12.4. Mobility in soil

**Mobility:** Highly soluble in water.

### 12.5. Results of PBT and vPvB assessment

This mixture does not fulfill the criteria for PBT or vPvB.

### 12.6. Other adverse effects

No other data are available.



### 13. DISPOSAL CONSIDERATIONS

Disclaimer: Information in this section pertains to the product as shipped in its intended composition as described in Section 3 of this MSDS. Contamination or processing may change waste characteristics and requirements. Regulations may also apply to empty containers, liners or rinsate. State/provincial and local regulations may be different from federal regulations.

#### 13.1. Waste treatment methods

**Waste from residues/unused products:** Product, as supplied, should be disposed of in accordance with the regulations issued by the appropriate federal, state and local authorities. Same consideration should be given to containers and packaging.

### 14. TRANSPORT INFORMATION

#### DOT

14.1 UN/ID no	Not regulated
14.2 Proper Shipping Name	Not regulated
14.3 Hazard Class	Not regulated
14.4 Packing group	Not regulated

#### IMDG

14.1 UN/ID no	Not regulated
14.2 Proper Shipping Name	Not regulated
14.3 Hazard Class	Not regulated
14.4 Packing group	Not regulated

#### RID

14.1 UN/ID no	Not regulated
14.2 Proper Shipping Name	Not regulated
14.3 Hazard Class	Not regulated
14.4 Packing group	Not regulated

#### ADR

14.1 UN/ID no	Not regulated
14.2 Proper Shipping Name	Not regulated
14.3 Hazard Class	Not regulated
14.4 Packing group	Not regulated

#### ICAO (air)

14.1 UN/ID no	Not regulated
14.2 Proper Shipping Name	Not regulated
14.3 Hazard Class	Not regulated
14.4 Packing group	Not regulated

#### IATA

14.1 UN/ID no	Not regulated
14.2 Proper Shipping Name	Not regulated
14.3 Hazard Class	Not regulated
14.4 Packing group	Not regulated

**IMO IBC Code:** Potassium Formate - Pollution Category Z, Pollution Hazard Only, Not Requiring a Chemical Tanker.

## 15. REGULATORY INFORMATION

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### European Union

Not a hazardous substance according to EC-Directive 67/548/EC, its various amendments and adaptations and EC-Regulation 1272/2008 (CLP).

**Germany Water hazard class (WGK):** Not determined

**Swiss Poison class:** Potassium Formate -- (tested and found to be not toxic): G-7498

#### International Inventories

<b>TSCA</b> - United States Toxic Substances Control Act Section 8(b) Inventory	Complies
<b>DSL/NDSL</b> - Canadian Domestic Substances List/Non-Domestic Substances List	Complies
<b>EINECS/ELINCS</b> - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances	Complies
<b>ENCS</b> - Japan Existing and New Chemical Substances	Complies
<b>IECSC</b> - China Inventory of Existing Chemical Substances	Complies
<b>KECL</b> - Korean Existing and Evaluated Chemical Substances	Complies
<b>PICCS</b> - Philippines Inventory of Chemicals and Chemical Substances	Does not comply
<b>AICS</b> - Australian Inventory of Chemical Substances	Complies
<b>NZIoC</b> - New Zealand Inventory of Chemicals	Complies
<b>TCSI</b> - Taiwan Chemical Substance Inventory	Complies

### 15.2. Chemical safety assessment

**EU Chemical Safety Assessment:** Per Article 14.1 of the REACH Regulation a Chemical Safety Assessment has been carried out.

**EU Exposure Scenarios:** Per Article 14.4 of the REACH Regulation no exposure scenario has been developed as the preparation/mixture is not hazardous.

## 16. OTHER INFORMATION

**References:** MARPOL 73/78, Latest edition of Marine Environment Protection Committee (MEPC) Circulars MEPC.2/Circular, IBC Code, IMO Resolution A.673(16) Guidelines for the Transport and Handling of Limited Amounts of Hazardous and Noxious Liquid Substances in bulk on Offshore Support Vessels.

#### Contacts:

See Section 1.

Tantalum Mining Corporation  
of Canada, Ltd.  
Bernic Lake  
Box 2000  
Lac du Bonnet, MB R0E 1A0  
CANADA  
Tel: 1-204-884-2400  
Fax: 1-204-884-2211

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**Prepared by:** Sinomine Specialty Fluids - Safety, Health and Environmental Affairs  
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**End of Safety Data Sheet**