

SAFETY DATA SHEET

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

Revision date: 23/May/2023

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

1.1. Product Identifier

Product code: KFORMSOL

Product name: Buffered Potassium Formate Brine

REACH Registration Number: See Section 3

Synonyms: KFormate; Potassium Formate Solution, Potassium Formate Fluid

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 K12, 5347 Kystbasen Agotnes, Bergen Norway Tlf: (+47) 55707052	Sinomine Specialty Fluids Ocean House Hareness Circle Altens Industrial Estate Aberdeen AB12 3LY SCOTLAND Tel: (+44) 1224-897229
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E-mailadresse: 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.

Principle Routes of Exposure:	Inhalation, Eye contact, Skin Contact
Eye Contact:	May cause irritation. Avoid contact with eyes.
Skin Contact:	May cause irritation. Avoid contact with skin.
Inhalation:	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.
Ingestion:	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Carcinogenicity:	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.
Target Organ Effects:	Respiratory system, Eyes, Skin
Medical Conditions Aggravated by Exposure:	None reasonably foreseeable under normal use
Potential Environmental Effects:	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.
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4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians:	Treat symptomatically.
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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 ₂), nitrogen (N ₂), 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 (CO₂). 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/cm²
 DN(M)EL - systemic effects -inhalation: 435 mg/m³

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

Physical State:	Liquid	Odor:	None.
Appearance:	No information available	Odor threshold:	No information available
Color:	Light yellow		

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

Melting point/freezing point:		No information available
Boiling point / boiling range:	134 - 140 °C	
Evaporation Rate:	< 0	@ 20 °C
Vapor pressure:	575-700 Pa	
Vapor Density:		No information available
Density:		No information available
Bulk Density:		No information available
Specific Gravity at 20°C:	1.53-1.57 g/cm ³	
Water solubility:	76.8% @ 20°C	
Solubility(ies):		No information available
Partition Coefficient (n-octanol/water):	< 0	No potential to bioconcentrate
Decomposition temperature:	360 °C	
Viscosity:	7 - 13 cP	@ 25 °C
Kinematic viscosity:		No information available
Dynamic viscosity:		No information available
Oxidizing Properties:		Not Applicable
Softening point:		No information available
VOC content (%):		Not Applicable
% Volatile (by Volume):		No information available
% Volatile (by Weight):		No information available
Surface Tension:		No information available
Explosive properties:		No information available
Flash Point:		No information available
Flammability (solid, gas):		No information available
Flammability Limit in Air:		No information available
Explosion Limits in Air - Upper (g/m³):		No information available
Explosion Limits in Air - Lower (g/m³):		No information available
Autoignition Temperature:		No information available
Minimum Ignition Temperature:		Not Applicable
Minimum Ignition Energy:		Not Applicable
Ignition Energy:		No information available
Maximum Absolute Explosion Pressure:		Not Applicable
Maximum Rate of Pressure Rise:		Not Applicable
Burn Velocity:		No information available
Kst Value:		Not Applicable
Dust Explosion Classification:		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 (H₂ 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 (CO₂), 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).

Reproductive and Developmental Toxicity:	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).
STOT - single exposure:	Based on available data, specific target organ toxicity is not expected after single oral, single inhalation, or single dermal exposure.
STOT - repeated exposure:	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.
Aspiration Hazard:	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

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