

## Safety Data Sheet

PRODUCT CODE: **KHF002L**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**Clay Stabilizer: KHF002L**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture:

GHS-US Classification:

Acute Toxicity. Category 3 (Oral): H301

Eye Irritation. Category 2A: H319

GHS-US Labeling:

Hazard Pictograms:



Signal Word:

Danger

Hazard Statements:

H301 - Toxic if swallowed.

H319 - Causes serious eye irritation.

Precautionary Statements:

P264 - Wash exposed skin thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P280 - Wear eye protection, protective gloves.

P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P321 - Specific treatment (see reference to supplemental first aid instruction on this label) if immediate administration of antidote is required. P330 - If swallowed, rinse mouth.

P337+P313 - If eye irritation persists: Get medical advice/attention.

P405 - Store locked up.

P501 - Dispose of contents/container to comply with local, state and federal regulation.

Other Hazards:

Water Slick

Unknown acute toxicity (GHS US):

No data available

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	Conc. [wt.%]	CAS#
Organic Ammonium Chloride	45-55	
Water	45-55	7732-18-5

### 4. FIRST AID MEASURES

Eye contact:

Immediately flush eyes with water for 30 minutes while holding eyelids open. Seek medical attention at once.

Skin contact:

Immediately remove contaminated clothes and shoes. Wash

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Inhalation:	with soap and water for 15 minutes Seek medical attention. Remove to fresh air. Seek medical attention if irritation persists or you feel unwell.
Swallowing:	If several grams are swallowed, immediate medical is required. If delayed, consider inducing vomiting with ipecac or other means. After vomiting give 2 glasses milk or water.
Note:	None

## **5. FIRE-FIGHTING MEASURES**

Extinguishing media:	Water Fog, Alcohol Foam, CO <sub>2</sub> , Dry Chemical.
Further information:	Wear protective firefighting clothing and avoid breathing vapors. Use self-contained breathing apparatus in closed areas. Material is an oxidizer.
NFPA Rating:	Health 3 Flammability 1 Reactivity 0 Other: None
Combustion products:	See Section 10.

## **6. ACCIDENTAL RELEASE MEASURES**

After spillage/leakage:	Contain with dikes. Put in steel or plastic drum. Soak up residual on inert absorbent (sand).
See Section 8 for protective equipment information.	
See Section 13 for disposal information.	

## **7. HANDLING AND STORAGE**

Special precautions:	No special precautions required.
Packaging requirements:	Steel or high density polyethylene (HDPE) container.
Ventilation:	No special requirements.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:	None normally needed.
Eye protection:	Chemical splash goggles.
Hand protection:	Impervious gloves made of rubber.
Skin protection:	Chemical resistant apron.
Exposure limit guidelines (mg/m <sup>3</sup> ):	No components have established exposure limits.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form:	Liquid
Color:	Colorless
Odor:	No
pH value:	7.0-8.0
Boiling point:	Not determined
Pour point:	Not determined
Flash point:	> 93°C
Method:	Pensky-Martens cc
Flammability (explosion limits in air):	
Lower:	Not determined
Upper:	Not determined
Auto-flammability (auto-ignition temperature):	Not determined
Vapor pressure:	Not determined
Relative density (specific gravity):	1.08-1.13
Bulk density (solids):	Not applicable

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Solubility in water:	Soluble
Viscosity:	6 mPa•s (20°C)
Relative vapor density (air=1):	Not determined
% Volatile:	50

## **10. STABILITY AND REACTIVITY**

Stability:	Stable
Conditions to avoid:	Unknown
Materials to avoid:	Oxidizers
Hazardous polymerization:	Will not occur.
Dust explosion hazard (solids):	Not applicable
Special hazards:	None
Hazardous decomposition products:	If heated strongly or burned, oxides of carbon and nitrogen, ammonia, chlorine oxides, hydrogen chloride and organic fumes are released.

## **11. TOXICOLOGICAL INFORMATION**

Eye contact:	Sever Irritant. Cause pain and redness. Prolonged or repeated contact may cause mild burn.
Skin contact:	Irritant; may cause pain, redness, dermatitis.
Inhalation:	Mildly irritating.
Ingestion:	Mildly Irritating; Toxic; can cause illness or death. LD50 (rats) = 220mg/kg
Carcinogenicity:	Not listed by IARC, USA NTP, or USA OSHA.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	Not known to cause birth defects.
Target organs which may be affected:	None known
Sensitization:	May cause allergic reaction upon repeated skin exposure.
Other:	None

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	
Main environmental hazards:	
Degradability:	None known
Other:	Toxic to microorganisms
Marine Toxicities:	None known

## **13. DISPOSAL CONSIDERATIONS**

Product:	Dispose of by incineration (preferred) or chemical deactivation or other acceptable method in accordance with local regulations.
Container:	Sell drum to an approved drum reconditioner or triple rinse crush and ship to sanitary landfill unless prohibited by local regulations.

## **14. TRANSPORT INFORMATION**

UN Number:	UN 2810
IMO Description:	Toxic liquid, organic n.o.s. (contains tetramethylammonium chloride).
Class:	6.1
Package Group:	III
Label:	Toxic 6

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EMS:	6.1-02
MFAG:	
LATA Description:	Toxic liquid, organic n.o.s. (contains tetramethylammonium chloride).
Class:	6.1
Sub Risk:	
Package Group:	III
Label:	Toxic 6
ADR Description:	Toxic liquid, organic n.o.s. (contains tetramethylammonium chloride).
ADR class/item:	5.1, 18c
ADR Danger ID:	60
ADR Label:	Toxic 6

## **15. REGULATORY INFORMATION**

Symbols:



Signal Word:

Warning

Risks:

Toxic if swallowed.

Safety advice:

S45 In case of accident or if you feel unwell. seek medical advice immediately (show the label where possible) with plenty of water and seek medical advice.

Notification/restrictions status:

EUROPEAN UNION (EU):

All components of this material are on the EINECS inventory, or the components are exempt from Inventory reporting.

NORWAY:

Not determined

USA:

All components of this material are on the USA inventory, or the components are exempt from inventory reporting.

## **16. OTHER INFORMATION**

### **REGULATORY INFORMATION**

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchant ability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. We make no representation as to completeness or accuracy. In no event we shall be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

\*\*\* END OF SDS\*\*\*

## Safety Data Sheet

PRODUCT CODE: **KHF003**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**Biocide: KHF003**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Health Hazards:

Eye contact:

Corneal damage or blindness

Skin contact:

Inflammation and blistering

Inhalation:

Irritation to gastro-intestinal or respiratory tract.

Over-exposure:

lung damage, choking, unconsciousness or death.

Environmental or Potential Chronic Hazards:

CARCINOGENIC EFFECTS:

Not available

MUTAGENIC EFFECTS:

Mutagenic for mammalian somatic cells. Mutagenic for bacteria.

TERATOGENIC EFFECTS:

Not available

DEVELOPMENTAL TOXICITY:

Classified Reproductive system/toxin/female and male.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	Conc. [wt.%]	CAS #
Quaternary Ammonium Chloride	40-60	-
Water	40-60	7732-18-5

### 4. FIRST AID MEASURES

Eye contact:

Remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

Skin contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Inhalation:

Remove to fresh air. Seek medical attention immediately.

Swallowing:

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Notes:

None

### 5. FIRE-FIGHTING MEASURES

Extinguishing media:

Water spray, Fog, Foam, Dry Chemical.

Further information:

Fine dust dispersed in air in sufficient concentrations, and in the presences of an ignition source is a potential dust explosion hazard.

NFPA Rating:

Health 3 Flammability 1 Reactivity 0 Other: None

Combustion products:

Not available

## **6. ACCIDENTAL RELEASE MEASURES**

After spillage/leakage:

Small Spill: Use appropriate tools to put the spilled solid in waste disposal container.

Large Spill: Corrosive solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources.

See Section 8 for protective equipment information.

See Section 13 for disposal information.

## **7. HANDLING AND STORAGE**

Special precautions:

Keep away from heat, sparks, and flame. Store out of direct sunlight in well ventilated area. Keep container closed when not in use. Use with adequate ventilation. Do not cut or weld on container.

Ventilation:

Provide ventilation to keep airborne concentrations below exposure limits.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:

Use respirator with organic vapor protection.

Eye protection:

Chemical splash goggles and face shield.

Hand protection:

Impervious gloves.

Skin protection:

Chemical resistant suit. Chemical resistant boots.

Exposure limit guidelines (mg/m<sup>3</sup>):

Not established.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form:

Liquid

Color:

Colorless to yellowish

Odor:

Aromatic

Boiling point:

Not available

Melting point:

Decompose at 140°C

pH value:

7.0-8.0

Vapor pressure:

Not available

Relative density (specific gravity):

0.95-1.00

Bulk density (solids):

Not available

Solubility in water:

Soluble 20°C

Relative vapor density (air=1):

Not available

% Volatile:

Not available

## **10. STABILITY AND REACTIVITY**

Stability:

Stable

Conditions to avoid:

Excess heat, dust generation, moisture, incompatible materials.

Materials to avoid:

Oxidizers

Hazardous polymerization:

Will not occur.

Dust explosion hazard (solids):

Not applicable

Special hazards:

None

## **11. TOXICOLOGICAL INFORMATION**

Eye contact:

Corrosive. Rapidly causes pain, burns, corneal injury. May cause permanent damage and blindness.

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Skin contact:	Corrosive; rapidly causes pain, burns, redness, swelling and damage to tissue.
Inhalation:	Irritant; may cause pain and coughing.
Ingestion:	Corrosive. causes pain and severe burns to mouth, throat and stomach. Harmful if swallowed; large amounts may cause illness. Acute oral toxicity (LD50): 240 mg/kg [Rat].
Carcinogenicity:	Not listed
Mutagenicity:	May cause heritable genetic damage.
Teratogenicity:	May cause adverse reproductive effects (fetotoxicity, fertility (female)).
Target organs which may be affected:	Bladder, Blood, Liver
Sensitization:	May cause allergic reaction.
Other:	None

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	
Main environmental hazards:	Toxic to aquatic organisms.
Degradability:	Not determined
Other:	None known

## **13. DISPOSAL CONSIDERATIONS**

Product:	Dispose of by incineration (preferred) or solidification or other acceptable method in accordance with local regulations.
Container:	Must be disposed of in accordance with federal, state and local environmental control regulations.

## **14. TRANSPORT INFORMATION**

DOT Classification:	Class 8: Corrosive material.
Identification:	Corrosive Solid, Acid, Organic, UN 1760 PG: II.
Special Provisions for Transport:	Not available

## **15. REGULATORY INFORMATION**

Risks:	R21/22 - Harmful in contact with skin and if swallowed. R34 - Causes burns. R41 - Risk of serious damage to eyes. R50 - Very toxic to aquatic organisms.
Safety advice:	S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S28 - After contact with skin, wash immediately with plenty of soap and water. S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S61 - Avoid release to the environment. Refer to special instructions/Safety data sheets.
Notification/restrictions status:	
USA:	All components of this material are on the USA TSCA inventory, or the components are exempt from inventory reporting.
OSHA:	Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
WHMIS (Canada):	CLASS D-1B: Material causing immediate and serious toxic

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effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC). CLASS E: Corrosive solid.

## **16. OTHER INFORMATION**

### **REGULATORY INFORMATION**

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\*\*\* END OF SDS\*\*\*



## Safety Data Sheet

PRODUCT CODE: **KHF004**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**Stabilizer Aid: KHF004**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture.

GHS-US Classification:

Skin Irritation Category 2

Serious eye damage Category 1

Specific target organ toxicity - repeated exposure - category  
2 - oral

GHS-US Labeling.

Hazard Pictograms:



Signal word:

Danger

Hazard Statements:

Causes skin Irritation.

Causes serious eye damage.

May cause damage to organs (kidney, liver, blood) through  
prolonged or repeated exposure if swallowed.

Precautionary Statements.

Prevention:

Do not breathe dust/fume/gas/mist/vapors/spray.

Wash skin thoroughly after handling.

Wear eye protection/face protection.

Response:

If on skin, wash with plenty of soap and water.

If in eyes, rinse cautiously with water for several minutes.

Remove contact lenses if present. Continue rinsing.  
Immediately call a POISON CENTER or doctor.

Get medical advice/attention if feeling unwell.

Get medical advice/attention if skin irritation occurs.

Take off contaminated clothes and wash before reuse.

Other Hazards:

No data available.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	Conc. [wt.%]	CAS#
Alkanolamine	85-99	
Water	1-15	7732-18-5

### 4. FIRST AID MEASURES

Eye contact:

Immediately flush eyes with water for 15 minutes while  
holding eyelids open. Seek medical attention at once.

Skin contact:

Immediately remove contaminated clothes and shoes. Wash  
with soap and water for 15minutes. Seek medical attention.

Inhalation:

Remove to fresh air.

Ingestion: Rinse mouth with water. Seek medical attention if irritation occurs.

## **5. FIRE-FIGHTING MEASURES**

Flammable properties:  
Flash point: Approximately 185°C  
Auto ignition temperature: No data available  
Flammable limits:  
LFL: No information available  
UFL: No information available  
Extinguishing media: Water Fog, Alcohol Foam, CO<sub>2</sub>, and Dry Chemical.  
Explosion hazards: Not applicable

## **6. ACCIDENTAL RELEASE MEASURES**

Main physical hazards: None  
Personal precautions: Do not get on skin or clothing. Wash thoroughly after handling. Wear suitable protective equipment.  
Methods for cleaning up: Contain with dikes. Soak up residual on inert absorbent (sand). Put in steel or plastic drum.  
Environmental precautions: Prevent further leakage or spillage. Keep out of water ways.

## **7. HANDLING AND STORAGE**

Special precautions: Do not store in contact with aluminum.  
Packing requirements: Steel or high density polyethylene (HDPE) container.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection: None normally needed. Use NIOSH approved respirator with organic vapor/acid gas protection (color coded yellow) if vapors are generated and for emergencies.  
Eye protection: Chemical splash goggles.  
Hand protection: Impervious gloves. Neoprene. PVC.  
Skin protection: Clean, body covering clothing. For spills and emergencies, also wear boots and impervious suit.  
Exposure limit guidelines (mg/m<sup>3</sup>): No components have established exposure limits.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance: Liquid  
Color: Colorless to light yellow  
Odor: Amine  
Boiling point: 335°C  
Freezing point: Not available  
Flash point: Approximately 185°C  
Melting point: Not determined  
pH value: 9.0-11.0 (1.0 vol.% water solution)  
Relative density (specific gravity): 1.12-1.18  
Ignition temperature: Not available  
Explosion limits:  
Lower: Not determined  
Upper: Not determined  
Vapor pressure: <0.001 kPa (20°C)

## **10. STABILITY AND REACTIVITY**

Stability:	Stable
Instability temperature:	None
Conditions of Instability:	None
Materials to avoid:	Oxidizers Acids Aluminum
Corrosivity:	Not available
Special remarks on reactivity:	Not available
Hazardous polymerization:	Will not occur
Dust explosion hazard (solids):	Not applicable

## **11. TOXICOLOGICAL INFORMATION**

Acute toxicity data	
Toxicity to Animals:	LD50 (rats)=8000mg/kg
Special remarks on toxicity to Animals:	Not available
Acute Effects:	
Eye contact:	Irritant. May cause pain, redness, discomfort.
Skin contact:	Irritant. May cause pain, redness, discomfort.
Inhalation:	No effect expected. Prolonged or repeated exposure may cause mild irritation.
Ingestion:	No effect expected. Swallow large amounts may be harmful.
Remarks:	Not available
Carcinogenicity/Mutagenicity:	This product is not considered to be a human or animal carcinogen.
Teratogenicity /Reproductive Toxicity:	This product is not known to cause teratogenicity or reproductive toxicity.
Sensitization:	Not available

## **12. ECOLOGICAL INFORMATION**

Eco toxicity:	Not available
Biodegradability:	Not available
Special Remarks on the Products of Biodegradation:	Not available

## **13. DISPOSAL CONSIDERATIONS**

Waste product:	Ship via permitted waste hauler to permitted hazardous waste disposal facility for incineration.
Contaminated packaging:	Sell drum to an approved drum reconditioner or triple rinse crush and ship to sanitary landfill unless prohibited by local regulation.

## **14. TRANSPORT INFORMATION**

The preparation is not classified as dangerous goods:	
Proper shipping name:	Not Regulated
Hazard class:	Not Regulated
Packing group:	None
Identification number:	Not regulated

## **15. REGULATORY INFORMATION**

European Labeling in Accordance with EC Directives:	
Hazard symbols:	-
Risk phrases:	None
Safety phrases:	None



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US Regulations

TSCA:

All ingredients are on the TSCA inventory.

## **16. OTHER INFORMATION**

### **REGULATORY INFORMATION**

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\*\*\* END OF SDS\*\*\*

## Safety Data Sheet

PRODUCT CODE: **KHF007S**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**Flowback Additive: KHF007S**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture:

GHS-US Classification:

Skin irritation, Category 3 H315

Eye irritation, Category 2B H320

Specific target organ toxicity, single exposure; H335

Respiratory tract irritation:

Specific target organ toxicity, single exposure; H336

Narcotic effects, Category 3:

GHS-US Labeling:

Hazard Pictograms:



Signal Word:

Warning

Hazard Statements:

H315 – Causes skin irritation.

H3320 – Causes eye irritation.

H335 – May cause respiratory irritation.

H336 – May cause drowsiness or dizziness.

Precautionary Statements:

P261 – Avoid breathing dust.

P264 - Wash hands, forearms, and exposed areas thoroughly after handling.

P271 - Use only outdoors or in a well-ventilated area.

P280 - Wear eye protection, protective clothing, and protective gloves.

P302+P352 – If on skin, wash with plenty of soap  
And water.

P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312 - Call a POISON CENTER or doctor/physician if you feel unwell.

P321 – Specific treatment (see reference to supplemental first aid instruction on this label).

P332+P313 – If skin irritation occurs: Get medical advice/attention.

P337+P313 - If eye irritation persists: Get medical advice/attention.

P403+P233 – Store in a well-ventilated place. Keep container tightly closed.

P405 – Store locked up

Other Hazards:

Unknown acute toxicity (GHS US):

P501 – Dispose of contents/container according to local, regional, national, and international regulations.

No additional information available

No data available

### **3. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Substance</b>	<b>Conc. [wt.%]</b>	<b>CAS#</b>
Petroleum Sulfonate Sodium Sulfonate	30-40	
Quaternary Ammonium Salt	20-30	3529-04-2
Polyether Emulsifier	10-20	9003-11-6
Water	20-30	7732-18-5

### **4. FIRST AID MEASURES**

Eye contact:

Flush eyes with water for 5 minutes. Get medical attention if irritation occurs.

Skin contact:

Wash with water and soap.

Inhalation:

Remove to fresh air.

Swallowing:

Do not induce vomiting. Give 2 glasses of milk or rinse mouth with water. Seek medical attention if irritation occurs.

Notes:

None

### **5. FIRE-FIGHTING MEASURES**

Extinguishing media:

Water fog, alcohol foam, CO<sub>2</sub>, dry chemical.

Further Information:

Vapor may travel along the ground. Avoid breathing.

NFPA Rating:

Health 1; Flammability 1; Reactivity 0; Other: None.

Combustion products:

see Section 10.

### **6. ACCIDENTAL RELEASE MEASURES**

After spillage/leakage:

Contain with dikes. Put in steel or plastic drum. Soak up residual on inert absorbent (sand).

See Section 8 for protective equipment information.

See Section 13 for disposal information.

### **7. HANDLING AND STORAGE**

Special precautions:

Away from heat, sparks or flames. Keep in well-ventilated areas to avoid direct sunlight.

Packaging requirements:

Steel or high-density polyethylene (HDPE) container.

Ventilation:

Provide ventilation to keep airborne concentrations below exposure limits.

### **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:

Normally not required.

Eye protection:

Chemical splash goggles.

Hand protection:

Impervious gloves made of rubber.

Skin protection:

Clean, body-covering clothing. Cotton gloves.

Exposure limit guidelines (mg/m<sup>3</sup>):

No components have established exposure limits.

### **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form:

Liquid

Color:

Light yellow

Odor:

Faint

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pH value:	7.0-9.5
Boiling point:	80°C
Pour point:	-10°C
Flash point:	Not determined
Method:	Pensky-Martens CC
Flammability (explosion limits in air):	
Lower:	Not determined
Upper:	Not determined
Auto flammability (auto-ignition temperature):	Not determined
Vapor pressure:	Not determined
Relative density (specific gravity):	1.00-1.05
Bulk density (solids):	Not applicable
Solubility in water:	Soluble

## **10. STABILITY AND REACTIVITY**

Stability:	Stable
Conditions to avoid:	Unknown
Materials to avoid:	Oxidizers
Hazardous Polymerization:	Will not occur.
Dust explosion hazard (solids):	Not applicable
Special hazards:	None
Hazardous decomposition products:	When heated strongly or burned, oxides of carbon and harmful organic chemical fumes are released.

## **11. TOXICOLOGICAL INFORMATION**

Eye contact:	May irritate, cause redness, pain or discomfort.
Skin contact:	Irritating, cause redness, pain and dermatitis.
Inhalation:	Mildly irritating
Ingestion:	Harmful if swallow large amount.
Carcinogenicity:	Not listed by IARC, USA NTP, or USA OSHA.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	Not known to cause birth defects.
Target organs which may be affected:	None known
Sensitization:	Not known to cause allergic reaction.
Other:	May cause dizziness, nausea or headache.

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	
Main environmental hazards:	Not available
Degradability:	Partially biodegradable
Other:	None known

## **13. DISPOSAL CONSIDERATIONS**

Products:	Dispose of by incineration (preferred) or other acceptable method in accordance with local regulations.
Container:	Sell drum to an approved drum re-conditioner or crush, and ship to sanitary landfill unless prohibited by local regulations.

## **14. TRANSPORT INFORMATION**

UN Number:	None
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IMO Description:	Not regulated
Class:	
Package Group:	
Label:	
EMS:	
MFAG:	
IATA Description:	Not regulated
Class:	
Sub Risk:	
Package Group:	
Label:	
ADR Description:	Not regulated
ADR class/item:	
ADR Danger ID:	

### **15. REGULATORY INFORMATION**

Symbols:	
Risks:	
Safety advice:	Exercise reasonable care and cleanliness.
Notification/restrictions status:	
EUROPEAN UNION (EU):	All components of this material are on the EINECS inventory, or the components are exempt from inventory reporting.
NORWAY:	Not determined.
USA:	All components of this material are on the USA TSCA inventory, or the components are exempt from inventory reporting.

### **16. OTHER INFORMATION**

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchant ability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. We make no representation as to completeness or accuracy. In no event we shall be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

\*\*\* END OF SDS\*\*\*



## Safety Data Sheet

PRODUCT CODE: **KHF011**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**Low Temperature Breaker: KHF011**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture:

GHS-US Classification:

Oxidizing solids, Category 3:	H272
Acute toxicity, oral, Category 4:	H302
Eye irritation, Category 2B:	H320

GHS-US Labeling:

Hazard Pictograms:



Signal Word:

Warning

Hazard Statements:

H272 - May intensify fire; oxidizer.

H302 - Harmful if swallowed.

H320 - Causes eye irritation.

Precautionary Statements:

P210 - Keep away from heat. - No smoking.

P220 - keep away from clothing and other combustible materials.

P221 - Take any precaution to avoid mixing with combustibles.

P264 - Wash hands, forearms, and exposed areas thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P280 - Wear eye protection, protective clothing, and protective gloves.

P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312 - Call a POISON CENTER or doctor/physician if you feel unwell.

P330 - Rinse mouth.

P337+P313 - If eye irritation persists: Get medical advice/attention.

P370+P378 - In case of fire: Use appropriate media for extinction.

P501- Dispose of contents/container according to local, regional, national, and international regulations.

Other Hazards:

No additional information available.

Unknown acute toxicity (GHS US):

No data available

### **3. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Substance</b>	<b>Conc. [wt.%]</b>	<b>CAS#</b>
Ammonium Persulfate	90-100	7727-54-0

### **4. FIRST AID MEASURES**

Eye contact:	Immediately flush eye with water for 15 minutes while holding eyelids open, seek medical attention.
Skin contact:	Remove contaminated clothes and shoes. Wash thoroughly with soap and water. Seek medical attention if irritation occurs.
Inhalation:	Remove to fresh air. Seek medical attention if irritation persists or you feel unwell.
Swallowing:	If several grams are swallowed, immediate medical is required. If delayed, consider inducing vomiting with ipecac or other means. After vomiting give milk or water.
Notes:	Do not attempt to neutralize with basic or halide containing materials. Effects are related to oxidizing properties.

### **5. FIRE-FIGHTING MEASURES**

Extinguishing media:	Water Fog, Water.
Further Information:	Wear protective firefighting clothing and avoid breathing vapors. Use self-contained breathing apparatus in closed areas. Material is an oxidizer.
NFPA Rating:	Health 1; Flammability 0; Reactivity 0; Other: None.
Combustion products:	see Section 10.

### **6. ACCIDENTAL RELEASE MEASURES**

After spillage/leakage:	Scoop into containers. Flush residual with plenty of water. Keep away from organics and combustible materials.
See Section 8 for protective equipment information.	
See Section 13 for disposal information.	

### **7. HANDLING AND STORAGE**

Special precautions:	Do not store, transport with or allow to contact Combustible materials, corrosives, reducing agents or dry bromates (M24, M63, B29, XE67754).
Packaging requirements:	Bag with moisture barrier.
Ventilation:	Provide ventilation to keep airborne concentrations below exposure limits.

### **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:	Use respirator with dust and mist protection (P2, white).
Eye protection:	Chemical splash goggles.
Hand protection:	Impervious gloves made of PVC Butyl.
Skin protection:	Clean, body-covering clothing.
Exposure limit guidelines (mg/m <sup>3</sup> ):	Components having no established limits are not listed. (NE: Not established, ND: Not determined) These numbers may be referred to as OEL, MAC, MAK, MEL, OES, REL, PEL, or TLV. TWA is the 8-hour time weighted average. STEL is the short-term exposure limit. "C" indicates the value is a maximum concentration (ceiling).

### **9. PHYSICAL AND CHEMICAL PROPERTIES**

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Form:	Crystals
Color:	White
Odor:	Unpleasant
pH value:	3.0-7.0 (5.0 wt.% water solution)
Boiling point:	Decomposes
Pour point:	Decomposes at 120.1°C
Flash point:	Not combustible
Method:	Not applicable
Flammability (explosion limits in air):	
Lower:	Not applicable
Upper:	Not applicable
Auto flammability (auto-ignition temperature):	Not applicable
Vapor pressure:	Not determined
Relative density (specific gravity):	1.89-2.09
Bulk density (solids):	1000 kg/m <sup>3</sup>
Solubility in water:	Soluble (20°C)
Viscosity:	Not applicable
Relative Vapor Density (air=1):	Not applicable
% Volatile:	0.1

## **10. STABILITY AND REACTIVITY**

Stability:	Disintegrates slowly at room temperature and rapidly at higher temperatures, releasing oxygen.
Conditions to avoid:	Not determined
Materials to avoid:	Acids, moisture, reducing agents, organics, bases, combustible materials, dry bromates.
Hazardous Polymerization:	Will not occur.
Dust explosion hazard (solids):	Not applicable
Special hazards:	Explosive with dry bromates.
Hazardous decomposition products:	Ammonia, oxides of nitrogen Oxygen Sulfur oxides.

## **11. TOXICOLOGICAL INFORMATION**

Eye contact:	Irritant. May cause pain, redness, discomfort.
Skin contact:	Irritant; may cause pain, redness, dermatitis.
Inhalation:	Irritant; may cause pain and coughing.
Ingestion:	Harmful if swallowed; large amounts may cause illness. LD50 (rats) = 820 mg/kg Irritant; may cause pain or discomfort to mouth, throat and stomach.
Carcinogenicity:	Not listed by IARC, USA NTP, or USA OSHA.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	Not known to cause birth defects.

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	
Main environmental hazards:	None known
Degradability:	Not applicable
Other:	None known
Marine Toxicities:	
*Chaetogammarus marinus:	LC50(96h) = 56.6 mg/l
*Phaeodactylum tricornutum:	EC50(72h) = 320-1000 mg/l

*Skeletonema costatum:	EC50(48h) = 200 mg/l
*Abra alba:	EC50(5d) = 11 mg/l
*Acartia Tonsa:	LC50(48h) = 21 mg/l



### **13. DISPOSAL CONSIDERATIONS**

Products:	Dispose of by incineration (preferred) or chemical deactivation or other acceptable method in accordance with local regulations.
Container:	Send empty bags to sanitary landfill. Render other types of containers un-useable by puncturing or crushing and sanitary landfill unless prohibited by local regulations.

### **14. TRANSPORT INFORMATION**

UN Number:	1444
IMO Description:	Ammonium persulfate
Class:	5.1
Package Group:	III
Label:	Oxidizer 5.1
EMS:	5.1-06
MFAG:	725
IATA Description:	Ammonium persulfate
Class:	5.1
Sub Risk:	
Package Group:	III
Label:	Oxidizer 5.1
ADR Description:	Ammonium persulfate
ADR class/item:	5.1, 18c
ADR Danger ID:	50
ADR Label:	Oxidizer 5.1

### **15. REGULATORY INFORMATION**

Symbols:	 
Signal word:	Harmful, Oxidizing
Risks:	R22 - Harmful if swallowed. R37 - Irritating to respiratory system. R42/43 - May cause sensitization by inhalation and skin contact.
Safety advice:	S17 - Keep away from combustible material. S24/25 - Avoid contact with skin and eyes. S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Notification/restrictions status:	
EUROPEAN UNION (EU):	All components of this material are on the EINECS inventory, or the components are exempt from inventory reporting.
NORWAY:	Not determined
USA:	All components of this material are on the USA TSCA inventory, or the components are exempt from inventory reporting.



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## **16. OTHER INFORMATION**

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchant ability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. We make no representation as to completeness or accuracy. In no event we shall be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

\*\*\* END OF SDS\*\*\*

## Safety Data Sheet

PRODUCT CODE: **KHF012**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**Medium Temperature Encapsulated Breaker: KHF012**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture:

GHS-US Classification:

Oxidizing solids, Category 3: H272

Acute toxicity, oral, Category 4: H302

Eye irritation, Category 2B: H320

GHS-US Labeling:

Hazard Pictograms:



Signal Word:

Warning

Hazard Statements:

H272 - May intensify fire; oxidizer.

H302 - Harmful if swallowed.

H320 - Causes eye irritation.

Precautionary Statements:

P210 - Keep away from heat. - No smoking.

P220 - keep away from clothing and other combustible materials.

P221 - Take any precaution to avoid mixing with combustibles.

P264 - Wash hands, forearms, and exposed areas thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P280 - Wear eye protection, protective clothing, and protective gloves.

P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P312 - Call a POISON CENTER or doctor/physician if you feel unwell.

P330 - Rinse mouth.

P337+P313 - If eye irritation persists: Get medical advice/attention.

P370+P378 - In case of fire: Use appropriate media for extinction.

P501- Dispose of contents/container according to local, regional, national, and international regulations.

Other Hazards:

No additional information available

Unknown acute toxicity (GHS US)

No data available

### **3. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Substance</b>	<b>Conc. [wt.%]</b>	<b>CAS#</b>
Ammonium Persulfate	75-85	7727-54-0
Aliphatic Polymer	15-25	

### **4. FIRST AID MEASURES**

Eye contact:	Immediately flush eye with water for 15 minutes while holding eyelids open, seek medical attention.
Skin contact:	Remove contaminated clothes and shoes. Wash thoroughly with soap and water. Seek medical attention if irritation occurs.
Inhalation:	Remove to fresh air. Seek medical attention if irritation persists or you feel unwell.
Swallowing:	DO NOT induce vomiting. Give 2 glasses of milk (preferred) or water and seek medical attention at once.
Notes:	Symptoms of lung edema may be delayed for several hours and are intensified by physical strain. Rest and hospitalization are required after exposure.

### **5. FIRE-FIGHTING MEASURES**

Extinguishing media:	Deluge with water, Other methods not effective.
Further Information:	Wear protective firefighting clothing and avoid breathing vapors. Use self-contained breathing apparatus in closed areas. Material is an oxidizer.
NFPA Rating:	Health 2 Flammability 1 Reactivity 2 Other: Oxidizer
Combustion products:	see Section 10.

### **6. ACCIDENTAL RELEASE MEASURES**

After spillage/leakage:	Scoop into containers. Flush residual with plenty of water. Keep away from organics and combustible materials.
See Section 8 for protective equipment information.	
See Section 13 for disposal information.	

### **7. HANDLING AND STORAGE**

Special precautions:	Do not store, transport with or allow to contact combustible materials, corrosives, reducing agents or dry bromates (M24, M63, B29, XE67754).
Packaging requirements:	Bag with moisture barrier.
Ventilation:	Provide ventilation to keep airborne concentrations below exposure limits.

### **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:	Use respirator with dust and mist protection (P2, white).
Eye protection:	Chemical splash goggles.
Hand protection:	Impervious gloves made of PVC Butyl.
Skin protection:	Clean, body-covering clothing.
Exposure limit guidelines (mg/m <sup>3</sup> ):	Components having no established limits are not listed. (NE: Not established, ND: Not determined) These numbers may be referred to as OEL, MAC, MAK, MEL, OES, REL, PEL, or TLV. TWA is the 8-hour time weighted average. STEL is the short-term exposure limit. "C" indicates the value is a maximum concentration (ceiling).

### **9. PHYSICAL AND CHEMICAL PROPERTIES**

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Form:	Granules
Color:	White to tan
Odor:	Mild
pH value:	No data available
Boiling point:	Decomposes
Pour point:	Decomposes at 120°C
Flash point:	>100°C
Method:	Not applicable
Flammability (explosion limits in air):	
Lower:	Not applicable
Upper:	Not applicable
Auto flammability (auto-ignition temperature):	Not applicable
Vapor pressure:	Not determined
Relative density (specific gravity):	1.76-1.96
Bulk density (solids):	1150 kg/m <sup>3</sup>
Solubility in water:	Not applicable
Viscosity:	Not applicable
Relative Vapor Density (air=1):	Not applicable
% Volatile:	0.1

## **10. STABILITY AND REACTIVITY**

Stability:	Disintegrates slowly at room temperature and rapidly at higher temperatures, releasing oxygen.
Conditions to avoid:	Not determined
Materials to avoid:	Acids, moisture, reducing agents, organics, bases, combustible materials, dry bromates.
Hazardous Polymerization:	Will not occur.
Dust explosion hazard (solids):	Not applicable
Special hazards:	Explosive with dry bromates.
Hazardous decomposition products:	Ammonia, oxides of nitrogen Oxygen Sulfur oxides.

## **11. TOXICOLOGICAL INFORMATION**

Eye contact:	Irritant. May cause pain, redness, discomfort.
Skin contact:	Irritant; may cause pain, redness, dermatitis.
Inhalation:	Irritant; may cause pain and coughing.
Ingestion:	Harmful if swallowed; large amounts may cause illness. LD50 (rats) = 820 mg/kg Irritant; may cause pain or discomfort to mouth, throat and stomach.
Carcinogenicity:	Not listed by IARC, USA NTP, or USA OSHA.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	Not known to cause birth defects.
Target organs which may be affected:	None known

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	
Main environmental hazards:	None known
Degradability:	Not biodegradable
Other:	None known
Bioaccumulation and Biodegradation of the components:	

## **13. DISPOSAL CONSIDERATIONS**



products: Dispose of by incineration (preferred) or chemical deactivation or other acceptable method in accordance with local regulations.

Container: Send empty bags to sanitary landfill. Render other types of containers un-useable by puncturing or crushing and sanitary landfill unless prohibited by local regulations.

#### **14. TRANSPORT INFORMATION**

UN Number: 1444

IMO Description: Ammonium persulfate

Class: 5.1

Package Group: III

Label: Oxidizer 5.1

EMS: 5.1-06

MFAG: 725

IATA Description: Ammonium persulfate

Class: 5.1

Sub Risk:

Package Group: III

Label: Oxidizer 5.1



ADR Description: Ammonium persulfate

ADR class/item: 5.1, 18c

ADR Danger ID: 50

ADR Label: Oxidizer 5.1

#### **15. REGULATORY INFORMATION**

Symbols:  

Signal word: Harmful, Oxidizing

Risks: R22 Harmful if swallowed.  
R42/43 May cause sensitization by inhalation and skin contact.  
R8 Contact with combustible material may cause fire.

Safety advice: S17 - Keep away from combustible material.  
S24/25 - Avoid contact with skin and eyes.  
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Notification/restrictions status:

EUROPEAN UNION (EU): All components of this material are on the EINECS inventory, or the components are exempt from inventory reporting.

NORWAY: Not determined

USA: All components of this material are on the USA TSCA inventory, or the components are exempt from inventory reporting.

#### **16. OTHER INFORMATION**

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchant ability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. We make no representation as to completeness or accuracy. In no event we shall be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.



## Safety Data Sheet

PRODUCT CODE: **KHF013**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**High Temperature Breaker: KHF013**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Main health hazards:

Causes eye irritation. Harmful if swallowed. Cause irritation if swallowed.

Main environmental hazards:

None known

Main physical hazards:

Special precautions:

Explosive with ammonium.

Physical hazard:

Oxidizer

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	Conc. [wt.%]	CAS#
Bromate Compounds	90-100	-

### 4. FIRST AID MEASURES

Eye contact:

Immediately flush eye with water for 15 minutes while holding eyelids open, seek medical attention.

Skin contact:

Remove contaminated clothes and shoes. Wash thoroughly with soap and water. Seek medical attention if irritation occurs.

Inhalation:

Remove to fresh air. Seek medical attention if irritation persists or you feel unwell.

Swallowing:

If several grams are swallowed, immediate medical is required. If delayed, consider inducing vomiting with ipecac or other means. After vomiting give milk or water.

Notes:

None

### 5. FIRE-FIGHTING MEASURES

Extinguishing media:

Water Fog, Water.

Further Information:

Wear protective firefighting clothing and avoid breathing vapors. Use self-contained breathing apparatus in closed areas. Material is an oxidizer.

NFPA Rating:

Health 2 Flammability 0 Reactivity 0 Other: oxidizer

Combustion products:

see Section 10.

### 6. ACCIDENTAL RELEASE MEASURES

After spillage/leakage:

Scoop into containers. Flush residual with plenty of water.

See Section 8 for protective equipment information.

See Section 13 for disposal information.

### 7. HANDLING AND STORAGE

Special precautions:

Do not store, transport with or allow to contact combustible materials, corrosives, reducing agents or dry ammonium salts.

Packaging requirements:

Coated steel drum or HDPE can.

Ventilation: Provide ventilation to keep airborne concentrations below exposure limits.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection: Use respirator with dust and mist protection (P2, white).  
Eye protection: Chemical splash goggles  
Hand protection: Impervious gloves  
Skin protection: Clean, body-covering clothing.  
Exposure limit guidelines (mg/m<sup>3</sup>): Dust particles total: 10mg/m<sup>3</sup>, respirable fraction = 5mg/m<sup>3</sup>  
(NE: Not established, ND: Not determined)  
These numbers may be referred to as OEL, MAC, MAK, MEL, OES, REL, PEL, or TLV.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form: Granules  
Color: White  
Odor: None  
pH value: 7.0-8.0 (1.0 wt.% water solution)  
Boiling point: Decomposes  
Pour point: Decomposes at 380°C  
Flash point: Not combustible but supports combustion with other material.  
Method: Not applicable  
Flammability (explosion limits in air):  
Lower: Not applicable  
Upper: Not applicable  
Auto flammability (auto-ignition temperature): Not applicable  
Vapor pressure: Not determined  
Relative density (specific gravity): 3.27-3.47  
Bulk density (solids): 2060 kg/m<sup>3</sup>  
Solubility in water: 36% (20°C)  
Viscosity: Not applicable  
Relative Vapor Density (air=1): Not applicable  
% Volatile: 0

## **10. STABILITY AND REACTIVITY**

Stability: Stable but decompose rapidly at higher temperatures.  
Conditions to avoid: Not determined  
Materials to avoid: Acids, reducing agents, organics, combustible materials, dry ammonium salts.  
Hazardous Polymerization: Will not occur.  
Dust explosion hazard (solids): Not applicable  
Special hazards: Explosive with dry ammonium salts.  
Hazardous decomposition products: Bromine, bromine oxides

## **11. TOXICOLOGICAL INFORMATION**

Eye contact: Irritant. May cause pain, redness, discomfort.  
Skin contact: Irritant; may cause pain, redness, dermatitis.  
Inhalation: Irritant; may cause pain and coughing.  
Ingestion: Harmful if swallowed; large amounts may cause illness. LD50 (rats) = 400 mg/kg Irritant; may cause pain or discomfort to mouth, throat and stomach.

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Carcinogenicity:	Not listed by IARC, USA NTP, or USA OSHA.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	Not known to cause birth defects.
Target organs which may be affected:	Kidney, lung, blood

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	None known
Main environmental hazards:	Not biodegradable
Degradability:	None known



## **13. DISPOSAL CONSIDERATIONS**

Products:	Dispose of by incineration (preferred) or chemical deactivation or other acceptable method in accordance with local regulations.
Container:	Incinerate or hazardous waste landfill unless prohibited by local regulations.

## **14. TRANSPORT INFORMATION**

UN Number:	1494
IMO Description:	Bromates
Class:	5.1
Package Group:	III
Label:	Oxidizer 5.1
EMS:	5.1-06
MFAG:	745
IATA Description:	Ammonium persulfate
Class:	5.1
Sub Risk:	
Package Group:	II
Label:	Oxidizer 5.1
ADR Description:	Bromate
ADR class/item:	5.1, 16B
ADR Danger ID:	50
ADR Label:	Oxidizer 5.1

## **15. REGULATORY INFORMATION**

Symbols:	 
Signal word:	Harmful, Oxidizing
Risks:	R22 - Harmful if swallowed. R36/38 - Irritating to eyes and skin R9 explosive when mixed with combustibles.
Safety advice:	S22 - do not breathe dust S24/25 - Avoid contact with skin and eyes. S35 - must be deposited in a safe way.
Notification/restrictions status:	
EUROPEAN UNION (EU):	All components of this material are on the EINECS inventory, or the components are exempt from inventory reporting.
NORWAY:	Not determined
USA:	All components of this material are on the USA TSCA inventory, or the components are exempt from inventory

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reporting.

#### **16. OTHER INFORMATION**

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\*\*\* END OF SDS\*\*\*

## Safety Data Sheet

PRODUCT CODE: **KHF014**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**High Temperature Encapsulated Breaker: KHF014**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Main health hazards:

Causes eye irritation. Harmful if swallowed. Cause irritation if swallowed.

Main environmental hazards:

None known

Main physical hazards:

Special precautions:

Explosive with ammonium salts

Physical hazard:

Oxidizer

Pictogram:



Signal word:

Danger

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	Conc. [wt.%]	CAS#
Sodium Bromate	80-90	7789-38-0
Phenol Formaldehyde Resin	10-20	9003-35-4

### 4. FIRST AID MEASURES

Eye contact:

Immediately flush eye with water for 15 minutes while holding eyelids open, seek medical attention.

Skin contact:

Remove contaminated clothes and shoes. Wash thoroughly with soap and water. Seek medical attention if irritation occurs.

Inhalation:

Remove to fresh air. Seek medical attention if irritation persists or you feel unwell.

Swallowing:

If several grams are swallowed, immediate medical is required. If delayed, consider inducing vomiting with ipecac or other means. After vomiting give milk or water.

Notes:

None

### 5. FIRE-FIGHTING MEASURES

Extinguishing media:

Water

Further information:

Wear protective firefighting clothing and avoid breathing vapors. Use self-contained breathing apparatus in closed areas. Material is an oxidizer.

NFPA Rating:

Health 2 Flammability 0 Reactivity 2 Other: Oxidizer

Combustion products:

see Section 10.

### 6. ACCIDENTAL RELEASE MEASURES

After spillage/leakage:

Scoop into containers. Flush residual with plenty of water.

See Section 8 for protective equipment information.

See Section 13 for disposal information.

## **7. HANDLING AND STORAGE**

Special precautions:	Do not store, transport with or allow to contact combustible materials, corrosives, reducing agents or dry ammonium salts.
Packaging requirements:	No information
Ventilation:	Provide ventilation to keep airborne concentrations below exposure limits.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:	Use respirator with dust and mist protection (P2, white).
Eye protection:	Chemical splash goggles
Hand protection:	Impervious gloves
Skin protection:	Clean, body-covering clothing
Exposure limit guidelines (mg/m <sup>3</sup> ):	
Dust particles total:	10mg/m <sup>3</sup> , respirable fraction = 5mg/m <sup>3</sup> (NE: Not established, ND: Not determined) These numbers may be referred to as OEL, MAC, MAK, MEL, OES, REL, PEL, or TLV.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form:	Granules
Color:	Light yellow
Odor:	None
pH value:	Not determined
Boiling point:	N/A
Pour point:	Decomposes
Flash point:	>100°C
Method:	Not applicable
Flammability (explosion limits in air):	Not applicable
Lower:	Not applicable
Upper:	Not applicable
Auto flammability (auto-ignition temperature):	Not applicable
Vapor pressure:	N/A
Relative density (specific gravity):	1.92-2.12
Bulk Density (solids):	1790 kg/m <sup>3</sup> (25°C)
Solubility in water:	Not applicable
Viscosity:	Not applicable
Relative Vapor Density (air=1):	Not applicable
% Volatile:	0

## **10. STABILITY AND REACTIVITY**

Stability:	Stable but decompose rapidly at higher temperatures.
Conditions to avoid:	Not determined
Materials to avoid:	Acids, reducing agents, organics, combustible materials, dry ammonium salts.
Hazardous polymerization:	Will not occur
Dust explosion hazard (solids):	Not applicable
Special hazards:	Explosive with dry ammonium salts.
Hazardous decomposition products:	Bromine, bromine oxides

## **11. TOXICOLOGICAL INFORMATION**

Eye contact:	Severe irritant; may cause pain and redness.
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Skin contact:	Irritant. May cause pain, redness, discomfort.
Inhalation:	Irritant; may cause pain, redness, dermatitis.
Ingestion:	Harmful if swallowed; large amounts may cause illness. LD50 (rats) = 400 mg/kg Irritant; may cause pain or discomfort to mouth, throat and stomach.
Carcinogenicity:	Not listed by IARC, USA NTP, or USA OSHA.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	Not known to cause birth defects.
Target organs what might be affected:	Kidney, lung, blood

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	Not known
Main environmental hazards:	Not applicable
Degradability:	Not known

## **13. DISPOSAL CONSIDERATIONS**

Product:	Dispose by incineration (preferred) or chemical deactivation or other acceptable method in accordance with local regulations.
Container:	Incinerate or hazardous waste landfill unless prohibited by local regulations.

## **14. TRANSPORT INFORMATION**

UN Number:	1494
IMO Description:	Bromate
Class:	5.1
Package Group:	III
Label:	Oxidizer 5.1
EMS:	5.1-06
MFAG:	745
IATA Description:	Bromate
Class:	5.1
Sub Risk:	
Package Group:	II
Label:	Oxidizer 5.1
ADR Description:	Bromate
ADR class/item:	5.1, 16B
ADR Danger ID:	50
ADR Label:	Oxidizer 5.1

## **15. REGULATORY INFORMATION**

Symbols:



Harmful      Oxidizing

Risks:

R22 Harmful if swallowed.  
R36/38 Irritating to eyes and skin.  
R9 explosive when mixed with combustibles.

Safety advice:

S22 do not breathe dust.  
S24/25 Avoid contact with skin and eyes.  
S35 must be deposited in a safe way.

Notification/restrictions status:

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EUROPEAN UNION (EU):

All components of this material are on the EINECS inventory, or the components are exempt from inventory reporting.

NORWAY:

Not determined

USA:

All components of this material are on the USA TSCA inventory, or the components are exempt from inventory reporting.

## **16. OTHER INFORMATION**

### **DISCLAIMER:**

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchant ability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. We make no representation as to completeness or accuracy. In no event we shall be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

\*\*\* END OF SDS\*\*\*

## Safety Data Sheet

PRODUCT CODE: **KHF021**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**Guar Gelling Agent: KHF021**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Main health hazards:

Causes eye irritation.

Main environmental hazards:

None known

Main physical hazards:

Special precautions:

None

Physical hazard:

Water slick, dust explode.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	Conc. [wt.%]	CAS #
Guar Gum	98.5-99.5	9000-30-0
Fumaric Acid	0.5-1.5	110-17-8

### 4. FIRST AID MEASURES

Eye contact:

Flush eyes with water for 5 minutes. Get medical attention if irritation occurs.

Skin contact:

Rinse with water.

Inhalation:

Remove to fresh air.

Swallowing:

Rinse mouth with water. Seek medical attention if irritation occurs.

### 5. FIRE-FIGHTING MEASURES

Extinguishing media:

Water Fog, Alcohol Foam, CO<sub>2</sub>, Dry Chemical.

Further information:

Wear protective firefighting clothing and avoid breathing vapors. Use self-contained breathing apparatus in closed areas. Slick when wet. Suspended dust may present a dust explosion hazard.

NFPA Rating:

Health 0; Flammability 1; Reactivity 0; Other: none.

Combustion products:

see Section 10.

### 6. ACCIDENTAL RELEASE MEASURES

After spillage/leakage:

Scoop into containers. Avoid generating dust. Use water carefully; slick when wet.

See Section 8 for protective equipment information.

See Section 13 for disposal information.

### 7. HANDLING AND STORAGE

Special Precautions:

Avoid wetting spilled material. Avoid generating dust.

Packaging requirements:

Paper bag (minimum 3 ply), or other industrial container designed for powders and granulated materials.

Ventilation:

Provide ventilation to keep airborne concentrations below exposure limits.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:	Use respirator with dust and mist protection (P2, white).
Eye protection:	Chemical splash goggles.
Hand protection:	Impervious gloves made of: Rubber.
Skin protection:	Clean, body-covering clothing.
Exposure limit guidelines (mg/m <sup>3</sup> ):	No components have established exposure limits.
Dust particles:	total = 10 mg/m <sup>3</sup> , respirable fraction = 5 mg/m <sup>3</sup> .

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form:	Powder
Color:	White
Odor:	Mild
pH value:	6.5-7.0 (0.6 wt.% water solution)
Boiling point:	Not applicable
Pour point:	Not determined
Flash point:	> 100°C
Method:	Not applicable
Flammability (explosion limits in air):	
Lower:	Not determined
Upper:	Not determined
Auto flammability (auto-ignition temperature):	Not determined
Vapor pressure:	Not applicable
Relative density (specific gravity):	1.35-1.55
Bulk density (solids):	700 kg/m <sup>3</sup> (25°C)
Solubility in water:	12.5 g/l (25°C)
Viscosity:	Not applicable
Relative vapor density (air=1):	Not applicable
% Volatile:	<10

## **10. STABILITY AND REACTIVITY**

Stability:	Stable
Conditions to avoid:	Not determined
Materials to avoid:	Oxidizers
Hazardous Polymerization:	Will not occur.
Dust explosion hazard (solids):	Yes
Special hazards:	None
Hazardous decomposition products:	When heated strongly or burned, oxides of carbon and harmful organic chemical fumes are released.

## **11. TOXICOLOGICAL INFORMATION**

Eye contact:	Irritant. May cause pain, redness, discomfort.
Skin contact:	No effect expected
Inhalation:	No effect expected
Ingestion:	No effect expected. LD50 (rats) > 5000 mg/kg.
Carcinogenicity:	Not listed by IARC, USA NTP, or USA OSHA.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	Not known to cause birth defects.
Target organs what might be affected:	Blood, Liver
Sensitization:	Not known to cause allergic reaction.
Other:	None

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:

Main environmental hazards: None known  
Degradability: Biodegradable. BOD = 0.7 p/p; COD = 0.96 p/p  
Other: None known

Bioaccumulation and Biodegradation of the components:

<b>Substance</b>	<b>Log Pow</b>	<b>Biodegradation</b>
FUMARIC ACID	0.56	78% (5d) - Literature

## **13. DISPOSAL CONSIDERATIONS**

Products: Dispose of by incineration (preferred) or hazardous waste landfilling or other acceptable method in accordance with local regulations.

Container: Send empty bags to sanitary landfill. Render other types of containers unusable by puncturing or crushing and sanitary landfill unless prohibited by local regulations.

## **14. TRANSPORT INFORMATION**

UN Number:  
IMO Description: Not regulated

Class:  
Package Group:

Label:

EMS:

MFAG:

IATA Description: Not regulated

Class:

Sub Risk:

Package Group:

Label:

ADR Description: Not regulated

ADR class/item:

ADR Danger ID:

TREM Card:

ADR Label:

## **15. REGULATORY INFORMATION**

Symbols:

Risks: Evaluated as not required to be labelled.

Safety advice: Exercise reasonable care and cleanliness.

Notification/restrictions status:

EUROPEAN UNION (EU): All components of this material are on the EINECS inventory, or the components are exempt from inventory reporting.

NORWAY: Not determined

USA: All components of this material are on the USA TSCA inventory, or the components are exempt from inventory reporting.

## **16. OTHER INFORMATION**

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own



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decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchant ability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. We make no representation as to completeness or accuracy. In no event we shall be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

\*\*\* END OF SDS\*\*\*

## Safety Data Sheet

PRODUCT CODE: **KHF021L**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**Guar Slurry: KHF021L**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Main health hazards:

May causes skin irritation.

Main environmental hazards:

None known

Main physical hazards

Special precautions:

None

Physical hazard:

Not Flammable but will burn.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	Conc. [wt.%]	CAS #
Guar Gum	40-60	9000-30-0
Base Oil	40-60	64742-96-7

### 4. FIRST AID MEASURES

Eye contact:

Flush eyes with water. If persistent irritation occurs, obtain medical attention.

Skin contact:

Remove contaminated clothes and shoes. Wash thoroughly with soap and water. Seek medical attention if irritation occurs.

Swallowing:

DO NOT induce vomiting. Transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101°F, shortness of breath, chest congestion or continued coughing and wheezing.

Notes:

Consider gastric lavage with protected airway, administration of activated charcoal. Call a doctor or poison control center for guidance.

### 5. FIRE-FIGHTING MEASURES

Extinguishing media:

Water Fog, Foam, CO<sub>2</sub>, Dry Chemical.

Unsuitable extinguishing media:

Do not use water in a jet.

Further information:

Wear protective firefighting clothing Use self-contained breathing apparatus. Keep adjacent containers cool by spraying water

Combustion products:

See Section 10.

### 6. ACCIDENTAL RELEASE MEASURES

After spillage/leakage:

Use personal protective clothing. Breathing protection required. Keep from contacting skin or eyes. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safety areas. Remove all sources of ignition.

See Section 8 for protective equipment information.

See Section 13 for disposal information.

## **7. HANDLING AND STORAGE**

Special precautions:

Avoid breathing vapors or mist. Avoid contact with eyes, skin, or clothing. Keep containers closed when not in use. Do not expose containers to open flame, excessive heat, or direct sunlight. Keep away from sources of ignition. Do not smoke while using material. Take measures to prevent the buildup of electrostatic charge. Do not puncture or drop containers. Handle with care and avoid spillage on the floor (slippage). Keep material out of reach of children. Keep material away from incompatible materials. Wash thoroughly after handling.

Packaging requirements:

Keep container tightly closed. Avoid inhalation of vapors or mist upon opening container. Store in a well-ventilated place. Do not store at elevated temperatures. Do not store in direct sunlight. Long-standing contact with air and light may result in the formation of potentially explosive peroxides. Use caution. Store away from strong acids, strong bases, strong oxidizing agents, strong reducing agents, Amines, Halogens, reactive metals (Zinc & Aluminum) and their alloys (Brass), Alkali metals, Alkali salts, liquid Chlorine and Chlorates.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:

Full-face vapor respirator may be required as backup to engineering controls when proper engineering controls are not in place to keep TLV and PEL limits below defined thresholds.

Eye protection:

When using material use safety goggles, gloves and apron according to HMIS PP, C. A vapor respirator according to HMIS PP, U is also strongly recommended if working with material in poorly ventilated spaces. All safety equipment should be tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Hand protection:

Chemically resistant gloves, apron and safety goggles are recommended. Type of protective equipment should be selected based on concentration amount and conditions of use of this material.

Skin protection:

Handle with gloves made from PVC, neoprene, nitrile, butyl-rubber or fluorinated-rubber. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact. Dispose of contaminated gloves according to applicable laws and laboratory practices.

Exposure limit guidelines (mg/m<sup>3</sup>):

Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapor.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form:	Liquid
Color:	Amber
Odor:	Hydrocarbon
pH value:	N/A
Boiling point:	200-300°C
Pour point:	Not determined
Flash point:	80°C
Method:	Tag closed cup
Flammability (explosion limits in air):	



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Lower:	0.5%
Upper:	4.9%
Auto flammability (auto-ignition temperature):	> 232°C
Vapor pressure:	< 0.02 kPa (20°C)
Relative density (specific gravity):	1.06-1.11
Bulk density (solids):	Not applicable
Solubility in water:	Insoluble
Viscosity:	Not determined
Relative vapor density (air=1):	> 5
% Volatile:	> 83%

## **10. STABILITY AND REACTIVITY**

Stability:	Stable under normal conditions.
Conditions to avoid:	Avoid heat, sparks, open flames and other ignition sources.
Materials to avoid:	Oxidizers
Hazardous polymerization:	Will not occur.
Dust explosion hazard (solids):	Not applicable
Special hazards:	None
Hazardous decomposition products:	Aldehydes, Carbon Oxides, Hydrocarbon particulate, Ketones and Organic Acids.

## **11. TOXICOLOGICAL INFORMATION**

Eye contact:	Mildly irritating
Skin contact:	May cause moderate skin irritation. Prolonged contact may cause defatting of the skin which leads dermatitis.
Inhalation:	Low toxicity: LC50 greater than near-saturated vapor concentration.
Ingestion:	Mildly irritating
Carcinogenicity:	Repeated exposure may cause skin tumor promotion in experimental animals.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	Not known to cause birth defects.
Target organs what might be affected:	Not known
Sensitization:	Not known to cause allergic reaction.
Other:	None

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	
Main environmental hazards:	Low toxicity
Degradability:	Readily biodegradable.
Other:	None known

## **13. DISPOSAL CONSIDERATIONS**

Product:	Hazardous wastes shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution, release into the environment or damage to people and animals. Contact a licensed professional waste disposal service to dispose of this material.
Container:	Drain container thoroughly. Vent in a safe place away from sparks and fire. Residues may cause an explosion hazard if heated above the flash point. Do not puncture, cut or weld uncleaned drums. Send to drum recoveree or metal

reclaimer.

#### **14. TRANSPORT INFORMATION**

US Department of Transportation Classification (49CFR):

Identification Number:	UN 1268
Proper Shipping Name:	Petroleum Distillates, n.o.s
Class/division:	Combustible liquid
Packing group:	III
Contains:	Oil
Emergency Response Guide No:	128
Additional Information:	This material is not regulated under 49 CFR if in a container of 119-gallon capacity or less. This material is an 'OIL' under 49 CFR Part 130 when Transported in a container of 3500-gallon capacity or greater.
IMDG:	This material is not classified as dangerous under IMDG regulations.
IATA (Country variations may apply):	This material is not classified as dangerous under IATA regulations.

#### **15. REGULATORY INFORMATION**

This regulatory information is not intended to be comprehensive.

Other regulations may apply to this material.

Federal Regulatory Status:

Notification Status:

AICS:	Listed	
DSL:	Listed	
INV (CN):	Listed	
TSCA:	Listed	
EINECS:	Listed	265-150-3
KECI (KR):	Listed	KE-25622
PICCS (PH):	Listed	

SARA Hazard Categories (311/312):

Fire Hazard:

Delayed (Chronic) Health Hazard:

State Regulatory Status

California State Drinking water and Toxic Enforcement Act (Proposition 65)	This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.
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#### **16. OTHER INFORMATION**

##### **REGULATORY INFORMATION**

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\*\*\* END OF SDS\*\*\*

## Safety Data Sheet

PRODUCT CODE: **KHF022**

Effective Date: December-2023

Version: 3.0

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

Identification of the substance or preparation:

**Foaming Agent: KHF022**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Main environmental hazards:

None

Main physical hazards:

Special precautions:

None

Physical hazard:

Flammable liquid

Main health hazards:

Harmful if absorbed through the skin. Harmful if swallowed.  
May cause eye irritation. May cause respiratory tract irritation.  
May cause skin irritation.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

<b>Substance</b>	<b>Conc. [wt.%]</b>	<b>CAS#</b>
Sodium Alpha Olefin Sulfonate	30-40	-
Ethylene Glycol	10-15	107-21-1
Isopropanol	10-20	67-63-0
Water	30-40	7732-18-5

### 4. FIRST AID MEASURES

Eye contact:

Immediately flush eyes with water for 15 minutes while holding eyelids open. Seek medical attention at once.

Skin contact:

Immediately flush with large amounts of water while removing contaminated clothing and shoes. Obtain medical attention if irritation persists. Wash clothing separately before reuse.

Inhalation:

Remove to fresh air. Obtain medical attention if symptoms persist. If the affected person is not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Swallowing:

Obtain medical attention immediately. Do not include vomiting.

Notes:

None.

### 5. FIRE-FIGHTING MEASURES

Extinguishing media:

Dry chemical, foam, CO<sub>2</sub>, water spray (fog), sand.

Further information:

May be combustible at high temperature. Slightly explosive in presence of open flames and sparks. When heated to decomposition it emits toxic fumes.

NFPA Rating:

Health 2 Flammability 3 Reactivity 0 Other: None.

Combustion products:

See Section 10.

### 6. ACCIDENTAL RELEASE MEASURES

After spillage/leakage:

Small Spills:

Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later

Large Spills: disposal.  
See Section 8 for protective equipment information. Dike far ahead of liquid spill for later disposal.  
See Section 13 for disposal information.

## **7. HANDLING AND STORAGE**

Special precautions: Wear self-contained breathing apparatus, chemical goggles, and impervious gloves during handling. Keep away from sources of heat and ignition. Keep away from oxidizing agents. Do not smoke. Prevent accumulation of dust particles. Avoid dispersion of dust to reduce fire and explosion potential. Avoid sparks and flame under dust conditions. Do not get in eyes, on skin, on clothing. Equip with fire and leakage equipment. Empty containers may contain product residue.

Packaging requirements: Coated (epoxy phenolic) steel drum (DOT 17E) or high-density polyethylene (HDPE) can.

Ventilation: Store in cool place. Keep in a well-ventilated place. Keep away from ignition and heat sources. Do not store near strong oxidizing agent. Equipped with container for leakage. Equip with fire equipment.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection: Use NIOSH approved respirator with organic vapor/acid gas protection (color coded yellow) Use SCBA (self-contained breathing apparatus) in confined areas and for emergencies.

Eye protection: Wear chemical goggles. Face-shield.

Hand protection: I Impervious gloves made of Viton.

Skin protection: Wear suitable protective clothing. Use impervious gloves.

Exposure limit guidelines (mg/m<sup>3</sup>): No components have established exposure limits.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form: Liquid

Color: Light yellow

Odor: Alcohol

pH value: 9.0-11.0

Boiling point: 100°C

Flash point: >30°C

Flammability (explosion limits in air):

Lower: Not determined

Upper: Not determined

Auto-flammability (auto-ignition temperature): Not determined

Vapor pressure: 3.4 kPa (77°F)

Relative density (specific gravity): 0.90-1.00

Bulk density (solids): Not applicable.

Solubility in water: Soluble (68°F).

Viscosity: Not determined

Relative vapor density (air=1): >1

Volatile%: N/A.

## **10. STABILITY AND REACTIVITY**

Stability: Stable at normal conditions.

Conditions to avoid: None

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Materials to avoid:	Strong oxidizing agents.
Hazardous polymerization:	Will not occur.
Dust explosion hazard (solids):	Not applicable
Special hazards:	None
Hazardous decomposition products:	CO, CO <sub>2</sub> , oxides of sulfur, Na <sub>2</sub> O.

### **11. TOXICOLOGICAL INFORMATION**

Typical contact	Irritant. May cause pain, redness, discomfort.
Skin contact:	Harmful if absorbed through the skin; may cause illness. Irritant; may cause pain, redness, dermatitis.
Inhalation:	Harmful if inhaled; may cause illness. Irritant; may cause pain and coughing.
Ingestion:	Harmful if swallowed; large amounts may cause illness.
Carcinogenicity:	C14-18AOS, C14-16 AOS and C16 1,4 - sulfone have no carcinogenic effect.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	The potential teratogenic effect was not found by oral feeding the mice, rats and rabbits.
Target organs which may be affected:	Bladder, Blood, Kidney, Liver, Reproductive, Sense organs.
Sensitization:	Not known to cause allergic reaction.
Other:	Can cause headache, narcosis. May cause nausea.

### **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	
Main environmental hazards:	None known
Degradability:	Primary biodegradation is up to 98~99% for 3 days.
Other:	None known
Bioaccumulation and Biodegradation of the components	
Substance	None known
Log Pow	None known
BioDegradation	None known

### **13. DISPOSAL CONSIDERATIONS**

Product:	All wastes must be handled in accordance with local and national regulations. Burning method was suggested. Sulfur oxides from incinerators were removed by scrubber.
Container:	Sell drum to an approved drum reconditioned or triple rinse, crush, and ship to sanitary landfill unless prohibited by local regulations.

### **14. TRANSPORT INFORMATION**

Packaging:	Package with small mouth plastic bucket. The container must be dry and clean without leakage. The lid must be tightly closed.
Transport Notes:	During the transportation process, the container should not leak and fall, no damage. Transportation with oxidant, food chemicals is strictly prohibited. Transportation should prevent rain, high temperature and direct sunlight. The vehicles should be washed thoroughly after finishing.

### **15. REGULATORY INFORMATION**

Regulations:	The State Council issued, February 17, 1987
Implementing Regulations:	NO.677, Department of Labor and Chemical Industry issued, 1992

**16. OTHER INFORMATION****DISCLAIMER:****REGULATORY INFORMATION**

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchant ability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. We make no representation as to completeness or accuracy. In no event we shall be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

\*\*\* END OF SDS\*\*\*

## Safety Data Sheet

PRODUCT CODE: **KHFN0304**

Effective Date: December-2023

Version: 1.0

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

Identification of the substance or preparation:

**Crosslinker: KHFN0304**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Main health hazards:

Causes severe eye burns. Causes burns to mouth, throat and stomach. Causes burns to respiratory tract. Causes severe skin burns.

Main physical hazards:

Special precautions:

None

Physical hazard:

Corrosive to metals

Main health hazards:

None known

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

<b>Substance</b>	<b>Conc. [wt.%]</b>	<b>CAS#</b>
Sassolite	5-10	Proprietary Product
Sodium Hydroxide	10-20	1310-73-2
Sugar Alcohol	5-15	Proprietary Product
Alkanolamine	15-25	Proprietary Product
Water	50-60	7732-18-5

### 4. FIRST AID MEASURES

Eye contact:

Immediately flush eyes with plenty of water for 30 minutes while holding eyelids open. Seek medical attention immediately.

Skin contact:

Remove contaminated clothes and shoes. Wash thoroughly with soap and water for 30 minutes. Seek medical attention at once.

Inhalation:

Remove to fresh air. Seek medical attention at once.

Swallowing:

Do not induce vomiting. If several grams are swallowed, give large quantity of milk with magnesia seek medical attention at once.

Notes:

None

### 5. FIRE-FIGHTING MEASURES

Extinguishing media:

None needed

Further information:

May release hydrogen gas on contact with metals

NFPA Rating:

Health 3 Flammability 1 Reactivity 0 Other: None

Combustion products:

See Section 10.

### 6. ACCIDENTAL RELEASE MEASURES

After spillage/leakage:

Contain with dikes. Put in steel or plastic drum. May be neutralized with sodium bicarbonate. Flush residual with plenty of water.

See Section 8 for protective equipment information.

See Section 13 for disposal information.

## **7. HANDLING AND STORAGE**

Special precautions:	Do not store in contact with aluminum.
Packaging requirements:	Uncoated phosphatized steel drum or high density polyethylene (HDPE) can.
Ventilation:	Provide ventilation to keep airborne concentrations below exposure limits.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:	None normally needed
Eye protection:	Chemical splash goggles. Face shields.
Hand protection:	Impervious gloves made of rubber.
Skin protection:	Chemical resistant clothing and boots.

Exposure limit guidelines (mg/m<sup>3</sup>):

Components having no established limits are not listed.

(NE: Not established, ND: Not determined)

These numbers may be referred to as OEL, MAC, MAK, MEL, OES, REL, PEL, or TLV.

TWA is the 8-hour time weighted average. STEL is the short-term exposure limit.

"C" indicates the value is a maximum concentration (ceiling).

	<b>SODIUM HYDROXIDE</b>		
	<u>TWA</u>	<u>STEL</u>	<u>ANM</u>
AUSTRALIA	2	NE	
BELGIUM	2	NE	
DENMARK	2	NE	
EU	NE	NE	
FRANCE	2	NE	
GERMANY	2 C	NE	
HOLLAND	2	NE	
NORWAY	2	NE	
UNITED KINGDOM	2	2	

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form:	Liquid
Color:	Light yellow
Odor:	None
pH value:	12.0-14.0 (1.0 vol.% water solution)
Boiling point:	115°C
Pour point:	8°C
Flash point:	Not combustible
Flammability (explosion limits in air):	Not applicable
Lower:	Not applicable
Upper:	Not applicable
Vapor pressure:	Not determined
Relative density (specific gravity):	1.18-1.23
Bulk density (solids):	Not applicable
Solubility in water:	Soluble (20°C)
Relative vapor density (air=1):	Not determined
Volatile%:	70



## **10. STABILITY AND REACTIVITY**

Stability:	Stable
Conditions to avoid:	Do not mix with other chemicals.
Materials to avoid:	Acids
Hazardous polymerization:	Will not occur
Dust explosion hazard (solids):	Not applicable
Special hazards:	None
Hazardous decomposition products:	None

## **11. TOXICOLOGICAL INFORMATION**

Eye contact:	Corrosive. Rapidly causes pain burns and injury. May cause permanent damage or blindness.
Skin contact:	Corrosive; rapidly cause pain, redness, swelling and damage to tissue.
Inhalation:	Corrosive. Short exposure can injure lungs, throat, and mucous membranes. Causes pain, burns, choking, and coughing.
Ingestion:	Corrosive. causes pain and severe burns to mouth, throat and stomach.
Carcinogenicity:	Not listed by IARC, USA NTP, or USA OSHA.
Mutagenicity:	Not known to cause heritable genetic damage.
Teratogenicity:	Not known to cause birth defects.
Target organs which may be affected:	Not known
Sensitization:	Not known to cause allergic reaction.
Other:	Not determined

## **12. ECOLOGICAL INFORMATION**

Information on product as a whole:	
Main environmental hazards:	None known
Degradability:	Not applicable
Other:	None known
Bioaccumulation and Biodegradation of the components.	

<b>Substance</b>	<b>Log Pow</b>	<b>Biodegradation</b>
SODIUM HYDROXIDE	PARCOM Dec 94/1	

## **13. DISPOSAL CONSIDERATIONS**

Product:	Dispose of by sanitary land-filling or other acceptable method in accordance with local regulations.
Container:	Send empty bags to sanitary landfill. Render other types of containers un-useable by puncturing or crushing and sanitary landfill unless prohibited by local regulations.

## **14. TRANSPORT INFORMATION**

UN Number:	UN 1824
IMO Description:	Mixed sodium hydroxide solution
Class:	8
Package Group:	II
Label:	Corrosive 8
EMS:	8-06
MFAG:	705
IATA Description:	Mixed sodium hydroxide solution
Class:	8

Sub Risk:	
Package Group:	II
Label:	Corrosive 8
ADR Description:	Mixed sodium hydroxide solution
ADR class/item:	8, 42b
ADR Danger ID:	80
TREM Card:	52 / 80g12
ADR Label:	Corrosive 8

## **15. REGULATORY INFORMATION**

Symbols:



Corrosive

Risks:

R35 Causes severe burns.

Safety advice:

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Notification/restrictions status:

EUROPEAN UNION (EU):

All components of this material are on the EINECS inventory, or the components are exempt from inventory reporting.

NORWAY:

Not determined.

USA:

All components of this material are on the USA TSCA inventory, or the components are exempt from inventory reporting.

## **16. OTHER INFORMATION**

### **DISCLAIMER**

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchant ability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. We make no representation as to completeness or accuracy. In no event we shall be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

\*\*\* END OF SDS\*\*\*

## Safety Data Sheet

PRODUCT CODE: **KHFN0510**

Effective Date: December-2023

Version: 1.0

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

Identification of the substance or preparation:

**Crosslinker: KHFN0510**

Company/undertaking identification:

OPT Chemicals Saudi Factory and Co.  
Dammam 2<sup>nd</sup> Industrial City, 6<sup>th</sup> Street, 101 Intersection,  
Postal code 34334, Kingdom of Saudi Arabia.  
+966 56 917 2181

Emergency phone:

### 2. HAZARDS IDENTIFICATION

Main health hazards:

Causes severe eye burns. Causes burns to mouth, throat and stomach. Causes burns to respiratory tract. Causes severe skin burns.

Main physical hazards:

Special precautions:

None

Physical hazard:

Corrosive to metals

Main health hazards:

None known

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

<b>Substance</b>	<b>Conc. [wt.%]</b>	<b>CAS#</b>
Sassolite	10-20	Proprietary Product
Sodium Hydroxide	10-20	1310-73-2
Sugar Alcohol	10-20	Proprietary Product
Alkanolamine	15-25	Proprietary Product
Water	40-50	7732-18-5

### 4. FIRST AID MEASURES

Eye contact:

Immediately flush eyes with plenty of water for 30 minutes while holding eyelids open. Seek medical attention immediately.

Skin contact:

Remove contaminated clothes and shoes. Wash thoroughly with soap and water for 30 minutes. Seek medical attention at once.

Inhalation:

Remove to fresh air. Seek medical attention at once.

Swallowing:

Do not induce vomiting. If several grams are swallowed, give large quantity of milk with magnesia seek medical attention at once.

Notes:

None

### 5. FIRE-FIGHTING MEASURES

Extinguishing media:

None needed

Further information:

May release hydrogen gas on contact with metals

NFPA Rating:

Health 3 Flammability 1 Reactivity 0 Other: None

Combustion products:

See Section 10.

### 6. ACCIDENTAL RELEASE MEASURES

After spillage/leakage:

Contain with dikes. Put in steel or plastic drum. May be neutralized with sodium bicarbonate. Flush residual with plenty of water.

See Section 8 for protective equipment information.

See Section 13 for disposal information.

## **7. HANDLING AND STORAGE**

Special precautions:	Do not store in contact with aluminum.
Packaging requirements:	Uncoated phosphatized steel drum or high density polyethylene (HDPE) can.
Ventilation:	Provide ventilation to keep airborne concentrations below exposure limits.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection:	None normally needed
Eye protection:	Chemical splash goggles. Face shields.
Hand protection:	Impervious gloves made of rubber.
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Exposure limit guidelines (mg/m<sup>3</sup>):

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	<u>TWA</u>	<u>STEL</u>	<u>ANM</u>
AUSTRALIA	2	NE	
BELGIUM	2	NE	
DENMARK	2	NE	
EU	NE	NE	
FRANCE	2	NE	
GERMANY	2 C	NE	
HOLLAND	2	NE	
NORWAY	2	NE	
UNITED KINGDOM	2	2	

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Form:	Liquid
Color:	Light yellow
Odor:	None
pH value:	12.0-14.0 (1.0 vol.% water solution)
Boiling point:	115°C
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Flash point:	Not combustible
Flammability (explosion limits in air):	Not applicable
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Vapor pressure:	Not determined
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Bulk density (solids):	Not applicable
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Relative vapor density (air=1):	Not determined
Volatile%:	70

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Stability:	Stable
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Hazardous polymerization:	Will not occur
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## **12. ECOLOGICAL INFORMATION**

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Bioaccumulation and Biodegradation of the components.

<b>Substance</b>	<b>Log Pow</b>	<b>Biodegradation</b>
SODIUM HYDROXIDE	PARCOM Dec 94/1	

## **13. DISPOSAL CONSIDERATIONS**

Product:	Dispose of by sanitary land-filling or other acceptable method in accordance with local regulations.
Container:	Send empty bags to sanitary landfill. Render other types of containers un-useable by puncturing or crushing and sanitary landfill unless prohibited by local regulations.

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Package Group:	II
Label:	Corrosive 8
ADR Description:	Mixed sodium hydroxide solution
ADR class/item:	8, 42b
ADR Danger ID:	80
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ADR Label:	Corrosive 8

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Corrosive

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Safety advice:

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S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

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\*\*\* END OF SDS\*\*\*