

# SAFETY DATA SHEET



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## KARL FISCHER REAGENT COMPOSITE 5 AND 5K

SDS No. M0244A

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Karl Fischer Reagent Composite 5 and 5K

Synonyms: KF Reagent Watermark® Pyridine Free Single Solution, 5mg/ml

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

### 2. HAZARDS IDENTIFICATION



**Classification:**

Flammable Liquids: GHS Category 4

Acute Toxicity, Oral: GHS Category 5

Reproductive Toxicity: GHS Category 1B

**Label Elements**

Signal Word: DANGER!

Hazard Statements:

- H226 – Flammable liquid and vapor.
- H302 – Harmful if swallowed.
- H312 – Harmful in contact with skin.
- H319 – Causes serious eye irritation.
- H332 – Harmful if inhaled.
- H360 - May damage fertility or the unborn child.

Precautionary Statements:

- P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- P280 – Wear protective gloves/protective clothing/eye protection/face protection.
- P301+P310 – If SWALLOWED: Immediately call or POISON CENTER or a doctor/physician.
- P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

## Emergency Overview

Harmful in contact with eyes. Harmful if swallowed inhaled, or absorbed through the skin. Causes irritation to eyes, skin and respiratory system. May cause reproductive effects. Flammable liquid and vapor. Target Organs: Kidneys, respiratory system, eyes, blood, and skin.

### HMIS Rating:

Health – 2\* Flammability – 2 Physical Hazard – 1 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

## 3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Ethylene Glycol Monomethyl Ether	109-86-4	60-80%	Yes
Iodine	7553-56-2	2.5-10%	Yes
Trade Secret	Proprietary	2.5-10%	Yes
Trade Secret	Proprietary	10-20%	Yes
Sulfur Dioxide	7446-09-5	10-20%	Yes

## 4. FIRST-AID MEASURES

Inhalation: Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen and call for medical assistance. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Ingestion: If swallowed, do NOT induce vomiting unless directed by medical personnel. Rinse mouth thoroughly with water. Get medical aid immediately.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.

Eye Contact: Get medical aid immediately. Rinse eyes with lots of water for at least 15 minutes. Do NOT allow victim to rub eyes or keep eyes closed.

Notes to Physician: Symptoms may be delayed.

## 5. FIRE FIGHTING MEASURES

Flammability: Flammable liquid and vapor (GHS Category 3)

Auto-ignition Temperature (EGME): 375° C (707° F)

Flash Point (DGME): 46° C (114° F)

Flammable Limits (DGME): Lower Limit – 1.774 vol %, Upper Limit – 13.3 vol %

Products of Combustion: May decompose into irritating and highly toxic gases under fire conditions (Carbon monoxide, oxides of nitrogen, oxides of sulfur, carbon dioxide).

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.

Specific Explosion Hazards: May form explosive peroxides.

Fire Fighting Media: Use dry chemical, carbon dioxide, water spray, or alcohol-resistant foam.

National Fire Protective Association: Health - 2, Flammability - 2, Reactivity - 1

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

## 6. ACCIDENTAL RELEASE MEASURES

Use water spray to reduce vapors. Water spray may reduce vapors but still not prevent ignition in closed spaces. Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Do not use sawdust or any combustible material. Use spark-proof tools. Provide ventilation to the affected area and remove all ignition sources. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Do not allow run-off to enter drains or waterways. Always use proper personal protective equipment as described in section 8.

## 7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Protect from moisture.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or other appropriate eye protection. Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits for EGME:

ACGIH – 0.1 ppm TWA;  
NIOSH – 0.1 ppm TWA; 1 mg/m<sup>3</sup> TWA; 200 ppm IDLH  
OSHA Final PELs – 25 ppm TWA; 80 mg/m<sup>3</sup> TWA

Exposure Limits for Diethanolamine:

ACGIH – 2 mg/m<sup>3</sup> TWA;  
NIOSH – 3 ppm TWA; 15 mg/m<sup>3</sup> TWA

Exposure Limits for Iodine:

ACGIH – 0.1 ppm STEL, 1 ppm mg/m<sup>3</sup> STEL  
NIOSH – 0.1 ppm TWA; 1 mg/m<sup>3</sup> TWA; 2 ppm IDLH  
OSHA Final PELs – 0.1 ppm TWA; 1 mg/m<sup>3</sup> TWA

Exposure Limits for Sulfur Dioxide:

ACGIH – 2 ppm TWA; 5 ppm STEL  
NIOSH – 2 ppm TWA; 5 mg/m<sup>3</sup> TWA; 100 ppm IDLH  
OSHA Final PELs – 5 ppm TWA; 13 mg/m<sup>3</sup> TWA  
OSHA Vacated PELs - 2 ppm TWA; 5 mg/m<sup>3</sup> TWA

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Reddish brown liquid.

Odor: Strong irritating odor

Auto-ignition Temperature (EGME): 375° C (707° F)

Flash Point (DGME): 46° C (114° F)

Flammable Limits (DGME): Lower Limit – 1.774 vol %, Upper Limit – 13.3 vol %

pH: Approximately 6.0  
Boiling Point (Iodine): 124° C @ 760 mm Hg  
Freezing/Melting Point (EGME): -38° C  
Decomposition Temperature: Not available  
Specific Gravity: 1.2  
Vapor Density (Air=1): >1  
Vapor Pressure: 445 hPa estimated  
Viscosity: Not available  
Solubility: Miscible

## 10. STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressures.  
Conditions to Avoid: Ignition sources, excess heat.  
Incompatibility With Various Substances: Strong oxidizing agents, strong acids, acid chlorides, acid anhydrides.  
Hazardous Decomposition Products: Carbon monoxide, oxides of nitrogen, oxides of sulfur, carbon dioxide.  
Hazardous Polymerization: Will not occur.

## 11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Causes irritation to the respiratory tract.

INGESTION HAZARD: Harmful if swallowed. May cause blood disorders.

SKIN CONTACT HAZARD: Causes skin irritation and dermatitis.

EYE CONTACT HAZARD: Harmful in contact with eyes. May cause eye irritation or burns on contact. May cause corneal injury on contact.

Chronic Exposure Hazards: Repeated absorption may cause conjunctiva, edema, cyanosis, sterility, as well as central nervous system, liver, blood, and kidney injury. Prolonged or repeated contact may cause defatting and drying of the skin. May cause adverse reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. Pregnant women of women of child-bearing age should not be exposed to this chemical.

Animal Toxicity (EGME):

Draize test, rabbit eye: 50 mg Moderate;  
 Draize test, rabbit eye: 500 mg/24H Mild;  
 Inhalation, mouse: LD50 = 1820 ppm/7H;  
 Inhalation, rat: LD50 = 2000 ppm/7H;  
 Oral, mouse: LD50 = 2451 mg/kg;  
 Oral, mouse: LD50 = 4000 mg/kg  
 Oral, rabbit: LD50 = 1275 mg/kg  
 Oral, rat: LD50 = 2125 mg/kg;  
 Skin, rat: LD50 = 3.6 mg/kg;  
 Skin, rabbit: LD50 = 3900 mg/kg;

Animal Toxicity Diethanolamine:

Oral, mouse: LD50 = 3300 mg/kg;  
 Oral, rabbit: LD50 = 2200 mg/kg;  
 Oral, rat: LD50 = 710 mg/kg;  
 Skin, rabbit: LD50 = 12200 mg/kg;

Animal Toxicity (Iodine):

Oral, mouse: LD50 = 22 gm/kg;  
 Oral, mouse: LD50 = 1000 mg/kg;  
 Oral, rabbit: LD50 = 10 gm/kg;  
 Oral, rat: LD50 = 14 gm/kg;

Animal Toxicity (Sulfur Dioxide):

Draize test, rabbit, eye: 6 ppm/32D Mild;  
 Inhalation, mouse: LC50 = 3000 ppm/30M;  
 Inhalation, rat: LC50 = 2520 ppm/1H;  
 Inhalation, rat: LC50 = 2168 mg/m<sup>3</sup>;

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: Hazardous by OSHA criteria.

Teratogenicity: EGME as caused fetotoxicity, embryotoxicity, and teratogenicity in animals at doses which are not harmful to the mother...

Reproductive Effects: EGME has caused harmful effects to male fertility in animals. Limited human studies have indicated that this material can cause reproductive effects in men. Iodine may have adverse reproductive effects on the newborn. Symptoms may be delayed.

Mutagenicity: No information available.

Neurotoxicity: No information available.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity (EGME):

Fish: bluegill/sunfish: LC50 = 10,000 mg/L, 96H, unspecified;  
 Fish: bluegill/sunfish: LC50 = 54000 mg/L, 24H, Modified ASTM D1345  
 Water fleas: Daphnia; EC50 = >10,000 mg/L, 24H, unspecified;  
 Water fleas: Ceriodaphnia dubia; EC50 = 61.8 - 86.04 mg/L, 48H, not reported intoxication;  
 Flat worm: Dugesia tigrina, >100 mg/l / 96H / static mortality  
 Bacteria: Phytobacterium phosphoreum: LC50 = 430 mg/L, 30M, Microtox test, no data available;

Environmental Fate (EGME): An estimated BCF value of 0.34 was calculated for ethylene glycol monoethyl ether using and experimental log Kow of -0.32 and a recommended regression-derived equation. According to a classification scheme, this BCF value suggests that bioconcentration in aquatic organisms is low.

## 13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. D001 – Waste flammable materials with a flash point of <140° F

## 14. TRANSPORT INFORMATION

### US DOT

Proper Shipping Name: Ethylene Glycol Monomethyl Ether solution  
 Hazard Class: 3  
 UN/NA: 1188  
 Packing Group: III

### IMDG

Proper Shipping Name: Ethylene Glycol Monomethyl Ether solution  
 Hazard Class: 3  
 UN/NA: 1188  
 Packing Group: III

### IATA

Proper Shipping Name: Ethylene Glycol Monomethyl Ether solution

Hazard Class: 3  
UN/NA: 1188  
Packing Group: III

## 15. REGULATORY INFORMATION

### US Federal Regulations:

CERCLA Hazardous Substances: CAS# 7446-09-5 – 1 lb/0.45 kg final RQ  
SARA Section 302: CAS# 7446-09-5 has both a TPQ and an extremely hazardous TPQ of 500lbs/227 kg  
SARA Codes: CAS # 7553-56-2: immediate, delayed, fire  
Section 313: EGME (as Glycol ether) (CAS# 111-90-0) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements. Ethylene glycol Monomethyl Ether and proprietary amines have 1.0% de minimus concentration.  
Clean Air Act: Glycol ether CAS# 111-90-0 is listed as a hazardous air pollutant (HAP).  
OSHA: CAS# 7446-09-5 is considered highly hazardous by OSHA.

### US State Regulations:

CAS# 109-86-4 can be found on the following state right to know lists: New Jersey (listed as Glycol ethers), Pennsylvania (listed as Glycol ethers), and Massachusetts; CAS# 7553-56-2 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts; CAS# 7446-09-5 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.  
California Prop 65: The following statement is made in order to comply with the California State Drinking Water Act:  
WARNING: This product contains Ethylene Glycol Monomethyl Ether, a chemical known to the state of California as a developmental toxin and a reproductive toxin.

## 16. OTHER INFORMATION

Originally Prepared: 1/1/2006

Last Revised: 11/4/2014 – Changed the signal word in Section 2.

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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