Safety Data Sheet

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision date: 13.01.2025	*Version: 6.1*	*Print date: 13.01.2025*

SECTION 1: Identification

Product identifier

Trade name/designation:	Karl Fischer Solvent for volumetric two-component KF titration (working medium)
Product No.:	BDH85453.290, BDH85453.320
Synonyms:	none
CAS No.:	Not applicable

Relevant identified uses of the substance or mixture and uses advised against

Recommended use	For Further Manufacturing Use Only
Uses advised against	Not for Human or Animal Drug Use

Details of the supplier of the safety data sheet

Supplier

VWR International LLC

Street	100 Matsonford Road Radnor Corporate Center, Building One, Suite 200 P. O. Box 6660
Postal code/City	Radnor, PA 19087, United States
Telephone	+1-800-932-5000 toll-free within US/Canada +1-610-386-1700
Telefax	+1-610-728-2103

Emergency phone number

Telephone +1-800-424-9300 (Chemtrec, 24 hrs/day, 7 days/week, USA)

Preparation Information

VWR International - Product Information Compliance

E-mail SDS@avantorsciences.com

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910.1200 (OSHA HCS)

Hazard classes and hazard categories	Hazard statements
Flammable liquid, category 2	H225
Acute toxicity, category 3, oral, dermal and inhalation	H301+H311+H331
Skin corrosion, category 1A	H314
Serious eye damage, category 1	H318
Reproductive toxicity, category 1B	H360
Specific target organ toxicity (single exposure), category 1	H370
Target Organs	
(1) no data available	

2.2 Label elements

Labelling in accordance with 29 CFR 1910.1200 (OSHA HCS)

Hazard pictograms



Signal word: Danger

Hazard statements	
H225	Highly flammable liquid and vapor.
H301+H311+H331	Toxic if swallowed, in contact with skin or if inhaled.
H314	Causes severe skin burns and eye damage.
H360	May damage fertility or the unborn child.
H370	Causes damage to organs.

Precautionary statements	
P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P243	Take precautionary measures against static discharge.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P270	Do not eat, drink or smoke when using this product.
P242	Use only non-sparking tools.
P202	Do not handle until all safety precautions have been read and understood.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P301+P330+P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P302+P352	IF ON SKIN: Wash with plenty of water.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P362+P364	Take off contaminated clothing and wash it before reuse.
P363	Wash contaminated clothing before reuse.
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.
P310	Immediately call a POISON CENTER/doctor.
P370+P378	In case of fire: Use water spray, foam, dry powder or carbon dioxide to extinguish.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

Hazard(s) not otherwise classified (HNOC)
none

SECTION 3: Composition/information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

Hazardous ingredients Classification according to the OSHA Hazard Communication Standard 29 CFR 1910.1200

Substance name	Concentration	Identifier	Hazard classes and hazard categories
Methanol	50 - 75 %	CAS No.: 67-56-1	Flam. Liq. 2 - H225 STOT SE 1 - H370 Acute Tox. 3 - H301+H311+H331
Imidazole	10 - < 25 %	CAS No.: 288-32-4	Acute Tox. 4 - H302 Skin Corr. 1B - H314 Repr. 1B - H360
Sulphur dioxide	10 - < 25 %	CAS No.: 7446-09-5	Acute Tox. 3 - H331 Skin Corr. 1B - H314 STOT SE 1 - H370

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. If unconscious but breathing normally, place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person or a person with cramps. Change contaminated, saturated clothing. Do not leave affected person unattended.

In case of inhalation

Call a POISON CENTER/doctor. Remove casualty to fresh air and keep warm and at rest. If breathing is irregular or stopped, administer artificial respiration.

In case of skin contact

After contact with skin, wash immediately with plenty of water and soap. Remove contaminated, saturated clothing immediately. In case of skin reactions, consult a physician.

After eye contact:

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye. Remove contact lenses, if present and easy to do. Continue rinsing.

In case of ingestion

If accidentally swallowed rinse the mouth with plenty of water (only if the person is conscious) and obtain immediate medical attention. Do NOT induce vomiting. Give nothing to eat or drink.

Self-protection of the first aider

First aider: Pay attention to self-protection!

4.2 Most important symptoms/effects, acute and delayed

no data available

4.3 Indication of any immediate medical attention and special treatment needed

no data available

SECTION 5: Fire fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray.
ABC-powder
Carbon dioxide (CO2).
Nitrogen

Extinguishing media which must not be used for safety reasons

no restriction

5.2 Specific hazards arising from the chemical

In case of fire may be liberated:
Pyrolysis products, toxic

5.3 Advice for firefighters

DO NOT fight fire when fire reaches explosives.
Protective equipment and precautions for firefighters:
Wear a self-contained breathing apparatus and chemical protective clothing.
Do not allow run-off from fire-fighting to enter drains or water courses.
Do not inhale explosion and combustion gases.
Use caution when applying carbon dioxide in confined spaces. Carbon dioxide can displace oxygen.
Use water spray jet to protect personnel and to cool endangered containers.
In case of fire: Evacuate area.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Do not breathe gas/vapor/spray. Provide adequate ventilation. Use personal protection equipment. In case of major fire and large quantities: Remove persons to safety. Wear a self-contained breathing apparatus and chemical protective clothing.

6.2 Environmental precautions

Do not allow to enter into surface water or drains. Make sure spills can be contained, e.g. in sump pallets or kerbed areas. Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up

Spilled product must never be returned to the original container for recycling. Clean contaminated articles and floor according to the environmental legislation. Collect in closed and suitable containers for disposal.

6.4 Reference to other sections

Clear spills immediately.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid:
Inhalation.
Avoid contact with eyes and skin.
Use extractor hood (laboratory).
If handled uncovered, arrangements with local exhaust ventilation have to be used.
If local exhaust ventilation is not possible or not sufficient, the entire working area must be ventilated by technical means.
Protect from moisture.

Wash hands before breaks and after work. Avoid contact with eyes and skin. When using do not eat, drink or smoke. Provide eye shower and label its location conspicuously.

7.2 Conditions for safe storage, including any incompatibilities

Recommended storage temperature: no data available
Keep container tightly closed and in a well-ventilated place.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredient (Designation)	Source	Country	parameter	Limit value
Methanol	NIOSH	US	LTV	260 mg/m³ - 200 ppm
Methanol	NIOSH	US	STV	325 mg/m³ (1) - 250 ppm (1)
Methanol	OSHA	US	LTV	260 mg/m³ - 200 ppm

8.2 Engineering controls

Appropriate engineering controls
Technical measures and the application of suitable work processes have priority over personal protection equipment. If handled uncovered, arrangements with local exhaust ventilation have to be used.

Personal protection equipment (PPE)
Wear suitable protective clothing. When handling with chemical substances, protective clothing must be worn.

Eye/face protection
Eye glasses with side protection

Skin protection
Wear suitable gloves. When handling with chemical substances, protective gloves must be worn. In the case of wanting to use the gloves again, clean them before taking off and air them well. Check leak tightness/impermeability prior to use.

By short-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,12 mm
Breakthrough time	60-120 min

By long-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,38 mm
Breakthrough time	> 480 min

Respiratory protection

Respiratory protection necessary at: aerosol or mist formation If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

Additional information

Wash hands before breaks and after work. Avoid contact with eyes and skin. When using do not eat, drink or smoke. Provide eye shower and label its location conspicuously.

Environmental exposure controls

no data available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical state:	liquid
Color:	light yellow
Odor:	no data available

Safety relevant basic data

pH:	no data available
Melting point/freezing point:	no data available
Initial boiling point and boiling range:	no data available
Flash point:	21 °C
Flammability:	Highly flammable liquid and vapor.
Lower and upper explosion limit	
Lower explosion limit:	5.5 % (v/v)
Upper explosion limit:	44 % (v/v)
Vapor pressure:	128 hPa (20 °C)
Relative vapour density:	no data available
Density and/or relative density	
Density:	0.89 g/cm³ (20 °C)
Solubility(ies)	
Water solubility:	no data available
Partition coefficient: n-octanol/water:	no data available
Auto-ignition temperature:	455 °C
Decomposition temperature:	Not applicable
Viscosity	
Kinematic viscosity:	no data available
Dynamic viscosity:	no data available
Particle characteristics:	does not apply to liquids

9.2 Other information

Evaporation rate:	no data available
Explosive properties:	no data available
Oxidising properties:	Not applicable
Bulk density:	no data available
Refraction index:	no data available
Dissociation constant:	no data available
Surface tension:	no data available
Henry's Law Constant:	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions

no data available

10.4 Conditions to avoid

no data available

10.5 Incompatible materials:

no data available

10.6 Hazardous decomposition products

no data available

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute effects

Acute oral toxicity:

Toxic if swallowed.

Acute dermal toxicity:

Toxic in contact with skin.

Acute inhalation toxicity:

Toxic if inhaled.

Irritant and corrosive effects:

Primary irritation to the skin:

Causes severe skin burns and eye damage.

Irritation to eyes:

Causes serious eye damage.

Irritation to respiratory tract:

Not applicable

Respiratory or skin sensitization
In case of skin contact: not sensitizing
In case of inhalation: not sensitizing

STOT-single exposure
Causes damage to organs.

STOT-repeated exposure
Not applicable

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
Carcinogenicity
No indication of human carcinogenicity.

IARC Monographs on the Identification of Carcinogenic Hazards to Humans:

Sulphur dioxide (CAS: 7446-09-5) - Group 3 - Not classifiable as to its carcinogenicity to humans

Occupational Safety and Health Administration (OSHA, 29 CFR Part 1910.1003):

Not listed

National Toxicology Program (NTP) Report:

Not listed

Germ cell mutagenicity
No indications of human germ cell mutagenicity exist.

Reproductive toxicity
May damage fertility or the unborn child.

Aspiration hazard
Not applicable

Other adverse effects
no data available

Additional information
no data available

SECTION 12: Ecological information

12.1 Toxicity

Fish toxicity:
Methanol - LC50: 15000 - 29400 mg/l (96 h) - Poirier, S.H., M.L. Knuth, C.D. Anderson-Buchou, L.T. Brooke, A.R. Lima, and P.J. Shubat 1986. Comparative Toxicity of Methanol and N,N-Dimethylformamide to Freshwater Fish and Invertebrates. Bull.Environ.Contam.Toxicol. 37(4):615-621

Daphnia toxicity:
Methanol - LC50: 2500 - 4810 mg/l (48 h) - Guilhermino, L., T. Diamantino, M.C. Silva, and A.M.V.M. Soares 2000. Acute Toxicity Test with Daphnia magna: An Alternative to Mammals in the Prescreening of Chemical Toxicity?. Ecotoxicol.Environ.Saf. 46(3):357-362

Methanol - EC50: 22200 - 46800 mg/l (48 h) - Randall, T.L., and P.V. Knopp 1980. Detoxification of Specific Organic Substances by Wet Oxidation. J.Water Pollut.Control Fed. 52(8):2117-2130

Algae toxicity:
Methanol - EC50: 22 000 mg/l (96 h) - Pseudokirchneriella subcapitata - IUCLID

Bacteria toxicity:
no data available

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
Partition coefficient: n-octanol/water: no data available

12.4 Mobility in soil:
no data available

12.5 Results of PBT/vPvB assessment
Not applicable

12.6 Endocrine disrupting properties
This product does not contain a substance that has endocrine disrupting properties with respect to the environment.

12.7 Other adverse effects
no data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Appropriate disposal / Product
Dispose according to legislation. Consult the appropriate local waste disposal expert about waste disposal.

Waste code product: no data available

Appropriate disposal / Package
Dispose according to legislation. Handle contaminated packages in the same way as the substance itself.

Additional information

none

No further relevant information available.

SECTION 14: Transport information

Land transport (DOT)

UN-No.:	UN2920
Proper Shipping Name:	CORROSIVE LIQUIDS, FLAMMABLE, N.O.S. (SULPHUR(IV)OXIDE / IMIDAZOLE / METHANOL)
Class(es):	8 (3)
Hazard label(s):	8+3
Packing group:	I
Environmental hazards:	No
Marine pollutant:	No
Special precautions for user:	

Sea transport (IMDG)

UN-No.:	2920
Proper Shipping Name:	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (SULPHUR(IV)OXIDE / IMIDAZOLE / METHANOL)
Class(es):	8 (3)
Hazard label(s):	8+3
Packing group:	I
Environmental hazards:	No
Marine pollutant:	No
Special precautions for user:	
Segregation group:	1
EmS-No.	F-E S-C

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
not relevant

Air transport (ICAO-TI / IATA-DGR)

UN-No.:	2920
Proper Shipping Name:	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (SULPHUR(IV)OXIDE / IMIDAZOLE / METHANOL)
Class(es):	8 (3)
Classification code:	
Hazard label(s):	8+3
Packing group:	I
Special precautions for user:	

SECTION 15: Regulatory information

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

National regulations

Toxic Substances Control Act (TSCA)

- Methanol - CAS No.: 67-56-1
- Imidazole - CAS No.: 288-32-4
- Sulphur dioxide - CAS No.: 7446-09-5

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Does not contain listed substances.

SARA 313 Components

- Methanol - CAS No.: 67-56-1

US State Regulations

Massachusetts Right To Know Components

- Methanol - CAS No.: 67-56-1
- Sulphur dioxide - CAS No.: 7446-09-5

Pennsylvania Right To Know Components

- Methanol - CAS No.: 67-56-1
- Sulphur dioxide - CAS No.: 7446-09-5

New Jersey Right To Know Components

- Methanol - CAS No.: 67-56-1
- Sulphur dioxide - CAS No.: 7446-09-5

California Prop. 65 Components

⚠ **WARNING:**

This product can expose you to chemicals including Methanol; Sulphur dioxide which are known to the State of California to cause birth defects or other reproductive harm.
For more information go to www.P65Warnings.ca.gov.

SECTION 16: Other information

Abbreviations and acronyms

ACGIH - American Conference of Governmental Industrial Hygiensts
DOT - Department of Transportation
IARC - International Agency for Research on Cancer
IATA-DGR - International Air Transport Association-Dangerous Goods Regulations
ICAO-TI - International Civil Aviation Organization-Technical Instructions
IMDG - International Maritime Code for Dangerous Goods
LTV - Long Term Value
NIOSH - National Institute for Occupational Safety and Health
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PBT - Persistent, Bioaccumulative and Toxic
PEL - Permissible Exposure Limit
STV - Short Term Value
SVHC - Substances of Very High Concern
TDG - Transport of Dangerous Goods
TLV - Threshold Limit Value
vPvB - very Persistent, very Bioaccumulative

Key literature references and sources for data
This Safety Data Sheet has been prepared based on information available for public as TOXNET information, European Chemicals Agency (ECHA) substance dossier, papers from international cancer research institutes (IARC Monographs), U.S. National Toxicology Program data, U.S. Agency for Toxic Substances and Disease Control (ATSDR), PubChem websites and SDS from our raw material manufacturers.

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13.01.2025	6.1	13.01.2025

Additional information

Indication of changes	Review and revision of Sections 2, 3, 4, 5, 9, 10 and 11. If you need an explanation of the change, contact the supplier (SDS@avantorsciences.com).

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guidance. The information in this document is based on the present state knowledge and is applicable to the product with regard to appropriate safty precautions. It does not represent any guarantee of the properties of the product. VWR International and his Affiliates shall not be held liable for any damage resulting from handling.