SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

KAESER-Sigma Fluid FG-460

Further trade names

KAESER-Sigma Fluid FG-460 cooling oil for rotary screw compressors (FGL), 9.1462.0, 9.1463.0, 9.1463.00010

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

Use of the substance/mixture

cooling lubricant for rotary screw compressor.

Uses advised against

Any non-intended use.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name:	Kaeser Compressors Pty Ltd
Street:	45 Zenith Road
Place:	Dandenong Vic 3175
Telephone:	+613 97915999
Responsible Department:	Msds.au@kaeser.com

1.4. Emergency telephone number: Giftinformationszentrum Nord Goettingen + 49 (0) 551 19240 (Poison Information Centre Goettingen)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No. 1272/2008

Hazard categories:
Hazardous to the aquatic environment: Aquatic Chronic 3
Hazard Statements:
Harmful to aquatic life with long lasting effects.

2.2. Label elements

Regulation (EC) No. 1272/2008

Hazard statements

H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

P273 Avoid release to the environment.
P501 Dispose of contents/container to local/regional/national/international regulations.

2.3. Other hazards

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Hazardous components

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	GHS Classification			
9003-29-6	Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)			=< 3 %

	Asp. Tox. 1; H304 EUH066			
68187-67-7	Amines, C12-14-alkyl, isooctyl phosphates			< 1 %
	269-119-5			
	Acute Tox. 4, Acute Tox. 4, Skin Corr. 1C, Eye Dam. 1, Aquatic Acute 1, Aquatic Chronic 1; H312 H302 H314 H318 H400 H410			

Full text of H and EUH statements: see section 16.

Further Information

Product does not contain listed SVHC substances > 0,1 % according to Regulation (EC) No. 1907/2006 Article 59 (REACH)

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

After inhalation

Remove person to fresh air and keep comfortable for breathing. If breathing is irregular or stopped, administer artificial respiration. When in doubt or if symptoms are observed, get medical advice.

After contact with skin

Take off immediately all contaminated clothing. Rinse skin with water/shower. In case of skin irritation, consult a physician.

After contact with eyes

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. In case of eye irritation consult an ophthalmologist.

After ingestion

Rinse mouth immediately and drink plenty of water. Do NOT induce vomiting. Observe risk of aspiration if vomiting occurs. Never give anything by mouth to an unconscious person or a person with cramps. When in doubt or if symptoms are observed, get medical advice.

4.2. Most important symptoms and effects, both acute and delayed

After eye contact : No information available.
Inhalation : No information available.
Skin contact : No information available.
ingestion. : No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

In case of fire:
Carbon dioxide (CO2)
Dry extinguishing powder
Foam
In case of major fire and large quantities:
Water spray jet

Unsuitable extinguishing media

High power water jet

5.2. Special hazards arising from the substance or mixture

Can be released in case of fire: Carbon dioxide (CO2). Carbon monoxide.

5.3. Advice for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing. In case of fire and/or explosion do not breathe fumes.

Additional information

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water. Use water spray jet to protect personnel and to cool endangered containers.
Co-ordinate fire-fighting measures to the fire surroundings.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For emergency responders: Avoid contact with skin, eyes and clothes. Wear personal protection equipment (refer to section 8).
For non-emergency personnel: Avoid contact with skin, eyes and clothes. Wear personal protection equipment (refer to section 8).

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Prevent spread over a wide area (e.g. by containment or oil barriers). Cover drains.

6.3. Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents).
Treat the recovered material as prescribed in the section on waste disposal.
Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Do not breathe vapour/aerosol. Avoid contact with skin, eyes and clothes.
Wear personal protection equipment (refer to section 8).

Advice on protection against fire and explosion

Usual measures for fire prevention.

Further information on handling

Advices on general occupational hygiene: See section 8.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed and in a well-ventilated place.
Keep only in original container.
Make sure spills can be contained, e.g. in sump pallets or kerbed areas.

Hints on joint storage

Do not store together with: Gas. Explosive hazardous substances. Oxidising substances (solid). Oxidising substances (liquid) Radioactive substances. Infectious substances.
Keep away from food, drink and animal feedingstuffs.

Further information on storage conditions

Protect against: UV-radiation/sunlight. Heat.

7.3. Specific end use(s)

refer to section 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Additional advice on limit values

Air limit values:
Possibility of exposure to Aerosol (Mineral oil)
Limit value (TLV-TWA) = 5 mg/m3 - Source: ACGIH
Limit value (TLV-STEL) = 10 mg/m3 - Source: ACGIH

STEL: short-term exposure limits
TLV: Threshold Limiting Value
TWA: time weighted average
ACGIH: American Conference of Governmental Industrial Hygienists

Recommended monitoring procedures:
DIN-/EN-Norms: EN 689, EN 14042, EN 482

8.2. Exposure controls

Appropriate engineering controls

Vapours / aerosols should be extracted by suction directly at point of origin.

Protective and hygiene measures

Always close containers tightly after the removal of product. Do not eat, drink or smoke when using this product.
Wash hands before breaks and after work. Take off contaminated clothing.
Do not put any product-impregnated cleaning rags into your trouser pockets.

Eye/face protection

Recommended eye protection articles: Eye glasses with side protection DIN EN 166

Hand protection

In case of prolonged or frequently repeated skin contact: Wear suitable gloves. DIN EN 374
Suitable material: NBR (Nitrile rubber).
Thickness of the glove material: 0,35 mm
Breakthrough time > 480 min.
Check leak tightness/impermeability prior to use. Breakthrough times and swelling properties of the material must be taken into consideration.

Skin protection

Protective clothing. DIN-/EN-Norms: 469
Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.

Respiratory protection

With correct and proper use, and under normal conditions, breathing protection is not required.
Respiratory protection necessary at:
generation/formation of aerosols
Recommended respiratory protection articles: Combination filtering device (EN 14387) Type: AP-2/3
The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.
Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).

Environmental exposure controls

Do not allow uncontrolled discharge of product into the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state:	Liquid
Colour:	Light yellow
Odour:	Characteristic - odourless

	Test result	Test method
pH-Value:	Not determined	Not known
Changes in the physical state		
Melting point:	Not determined	Not applicable
Initial boiling point and boiling range:	>371 °C	Not known
Pour point:	-39 °C	Not known
Flash point:	246 °C	COC
Sustaining combustion:	No data available	Not applicable
Flammability		
Solid:	Not applicable	
Gas:	Not applicable	
Explosive properties none		
Lower explosion limits:	Not determined	
Upper explosion limits:	Not determined	
Ignition temperature:	Not determined	Not applicable
Auto-ignition temperature		
Gas:	Not determined	
Decomposition temperature:	Not determined	Not applicable
Oxidizing properties none		
Vapour pressure: (at 25 °C)	< 0,1 hPa	Not known
Vapour pressure:		
Density (at 15 °C):	0,842 g/cm³	Not known
Bulk density:	The product has not been tested.	Not applicable
Water solubility:	not miscible	Not applicable
Solubility in other solvents Not determined		
Partition coefficient:	The product has not been tested.	
Viscosity / dynamic: (at 100 °C)	6,7 mPa·s	calculated
Viscosity / kinematic: (at 40 °C)	46 mm²/s	Not known
Flow time:	Not determined	Not applicable
Vapour density:	Not determined	Not applicable
Evaporation rate:	Not determined	Not applicable

Solvent separation test: Not determined

Solvent content: Not determined

9.2. Other information

Solid content: Not determined

Auto-ignition temperature: > 379°C

SECTION 10: Stability and reactivity

10.1. Reactivity

No information available.

10.2. Chemical stability

The product is chemically stable under recommended conditions of storage, use and temperature.

10.3. Possibility of hazardous reactions

Reacts with : Oxidizing agents, strong.

10.4. Conditions to avoid

UV-radiation/sunlight. Heat

10.5. Incompatible materials

Oxidizing agents, strong.

10.6. Hazardous decomposition products

Can be released in case of fire: Carbon dioxide (CO2). Carbon monoxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicocinetics, metabolism and distribution

No information available.

Acute toxicity

Based on available data, the classification criteria are not met.

CAS No	Chemical name				
	Exposure route	Dose		Species	Source
9003-29-6	Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)				
	oral	LD50	>10000 mg/kg	Rat	ECHA Dossier
	dermal	LD50	>2000 mg/kg	Rat	ECHA Dossier
	inhalation (4 h) vapour	LC50	[>19,17] mg/l	Rat	ECHA Dossier
68187-67-7	Amines, C12-14-alkyl, isooctyl phosphates				
	oral	LD50	> 200 mg/kg	Rat	ECHA Dossier
	dermal	ATE	1100 mg/kg		

Irritation and corrosivity

Based on available data, the classification criteria are not met.
Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene):
Serious eye damage/eye irritation:
Method: OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Species: Rabbit
Result / evaluation: Not an irritant. Literature information: ECHA Dossier

Amines, C12-14-alkyl, isooctyl phosphates:
Serious eye damage/eye irritation:
Method: OECD Guideline 404
Species: Rabbit
Result / evaluation: strongly irritant. Literature information: ECHA Dossier

Irritant effect on the skin:
Method: OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Species: Rabbit
Result / evaluation: corrosive. Literature information: ECHA Dossier

Sensitising effects

Based on available data, the classification criteria are not met.
Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene):
Skin sensitisation:
Method: OECD Guideline 406
Species: Guinea pig
Result / evaluation: not sensitising. Literature information: ECHA Dossier

Amines, C12-14-alkyl, isooctyl phosphates:
Skin sensitisation:
Method: OECD Guideline 406
Species: Guinea pig
Result / evaluation: not sensitising. Literature information: ECHA Dossier

Carcinogenic/mutagenic/toxic effects for reproduction

Based on available data, the classification criteria are not met.
Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene):
In-vitro mutagenicity:
Method: OECD Guideline 471, OECD Guideline 473
Result: negative. Literature information: ECHA Dossier
In-vivo mutagenicity:
Method: OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Result: negative. Literature information: ECHA Dossier
Reproductive toxicity:
Method: OECD Guideline 421
Species: Rat. Exposure route: oral.
Result: NOAEL (P) = 1000 mg/kg. NOAEL (F1) = 1000 mg/kg. Literature information: ECHA Dossier
Developmental toxicity/teratogenicity:
Method: OECD Guideline 422
Species: Rat. Exposure route: oral.
Result: NOAEL > 1000 mg/kg. Literature information: ECHA Dossier

Amines, C12-14-alkyl, isooctyl phosphates:
In-vitro mutagenicity:
Method: OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Result / evaluation: negative. Literature information: ECHA Dossier

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Based on available data, the classification criteria are not met.
Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene):
Subchronic oral toxicity:
Method: OECD Guideline 408
Species: Rat
Exposure time: 90 d.
Result: NOAEL >= 1000 mg/kg; Literature information: ECHA Dossier
Subchronic inhalation toxicity:
Method: -
Species: Rat
Exposure time: OECD Guideline 413
Result / evaluation: NOEC = 1000 mg/m³. Literature information: ECHA Dossier

Aspiration hazard

Based on available data, the classification criteria are not met.

Specific effects in experiment on an animal

There are no data available on the preparation/mixture itself.

SECTION 12: Ecological information

12.1. Toxicity

CAS No	Chemical name					
	Aquatic toxicity	Dose		[h] | [d]	Species	Source
9003-29-6	Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)					
	Acute algae toxicity	ErC50	>19,2 mg/l	72 h	Desmodesmus subspicatus (OECD 201)	ECHA Dossier
68187-67-7	Amines, C12-14-alkyl, isooctyl phosphates					
	Acute algae toxicity	ErC50	0,8 mg/l	72 h	Pseudokirchneriella subcapitata	ECHA Dossier
	Acute crustacea toxicity	EC50	17 mg/l	48 h	Daphnia magna	ECHA Dossier

12.2. Persistence and degradability

Due to its low solubility in water the product is almost completely mechanically separated in biological sewage plants.

CAS No	Chemical name			
	Method	Value	d	Source
	Evaluation			
9003-29-6	Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)			
	OECD Guideline 310	93,9 %	28	ECHA Dossier
	Easily biodegradable (concerning to the criteria of the OECD)			
68187-67-7	Amines, C12-14-alkyl, isooctyl phosphates			
	EU Method C.4-D	35%	28	ECHA Dossier
	Not easily bio-degradable (according to OECD-criteria).			

12.3. Bioaccumulative potential

Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
9003-29-6	Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)	7,6-7,8
68187-67-7	Amines, C12-14-alkyl, isooctyl phosphates	73,6

BCF

CAS No	Chemical name	BCF	Species	Source

9003-29-6	Butene, homopolymer (products derived from either/or But-1-ene/But-2-ene)	920-3340	Carp	ECHA Dossier

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

12.6. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Advice on disposal

Dispose of waste according to applicable legislation. Consult the local waste disposal expert about waste disposal. Non-contaminated packages may be recycled. According to (EWC) European Waste Catalogue, allocation of waste identity numbers/waste descriptions must be carried out in a specific way for every industry and process.
Waste codes/waste designations according to (EWC) European Waste Catalogue

Waste disposal number of waste from residues/unused products

130206 OIL WASTES AND WASTES OF LIQUID FUELS (EXCEPT EDIBLE OILS, AND THOSE IN CHAPTERS 05, 12 AND 19); waste engine, gear and lubricating oils; synthetic engine, gear and lubricating oils; hazardous waste

Waste disposal number of used product

130206 OIL WASTES AND WASTES OF LIQUID FUELS (EXCEPT EDIBLE OILS, AND THOSE IN CHAPTERS 05, 12 AND 19); waste engine, gear and lubricating oils; synthetic engine, gear and lubricating oils; hazardous waste

Waste disposal number of contaminated packaging

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances; hazardous waste

Contaminated packaging

Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number: No dangerous good in sense of these transport regulations.
14.2. UN proper shipping name: No dangerous good in sense of these transport regulations.
14.3. Transport hazard class(es): No dangerous good in sense of these transport regulations.
14.4. Packing group: No dangerous good in sense of these transport regulations.

Inland waterways transport (ADN)

14.1. UN number: No dangerous good in sense of these transport regulations.
14.2. UN proper shipping name: No dangerous good in sense of these transport regulations.
14.3. Transport hazard class(es): No dangerous good in sense of these transport regulations.
14.4. Packing group: No dangerous good in sense of these transport regulations.

Marine transport (IMDG)

14.1. UN number: No dangerous good in sense of these transport regulations.
14.2. UN proper shipping name: No dangerous good in sense of these transport regulations.

14.3. Transport hazard class(es): No dangerous good in sense of these transport regulations.

14.4. Packing group: -

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number: No dangerous good in sense of these transport regulations.

14.2. UN proper shipping name: No dangerous good in sense of these transport regulations.

14.3. Transport hazard class(es): No dangerous good in sense of these transport regulations.

14.4. Packing group: -

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

Danger releasing substance: Not relevant

14.6. Special precautions for user

See section 8.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not relevant

SECTION 15: Regulatory information

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

EU regulatory information

2010/75/EU (VOC): Not determined

2004/42/EC (VOC): Not determined

Information according to 2012/18/EU (SEVESO III): Not subject to 2012/18/EU (SEVESO III)

Additional information

The mixture is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].
REACH 1907/2006 appendix XVII: Not relevant (Mixtures)

National regulatory information

Water contaminating class (D): 1 - slightly water contaminating

Additional information

Approval according to USDA H1/NSF, registry number 131272

15.2. Chemical safety assessment

For the following substances of this mixture a chemical safety assessment has been carried out:

SECTION 16: Other information

Changes

Rev. 14.00; 01.06.2015, Initial release
Rev. 15.00; 29.11.2017, Changes in chapter: 1-16
Rev. 16.00: 26.09.2019. Changes in chapter: 2, 3, 8, 9, 11, 12, 15, 16

Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route
AwSV: Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen
AGW: Arbeitsplatzgrenzwert
AVV: Abfallverzeichnisverordnung
CAS Chemical Abstracts Service
CLP: Classification, Labelling and Packaging of substances and mixtures
DNEL: Derived No Effect Level
d: day(s)
EAKV: Europäisches Abfallverzeichnis gemäß Entwurf Abfallverzeichnisverordnung

EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European LIst of Notified Chemical Substances
ECHA: European Chemicals Agency
EWC: European Waste Catalogue
IARC: INTERNATIONAL AGENCY FOR RESEARCH ON CANCER
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
GefStoffV: Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)
h: hour
LOAEL: Lowest observed adverse effect level
LOAEC: Lowest observed adverse effect concentration
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
NOAEL: No observed adverse effect level
NOAEC: No observed adverse effect level
NLP: No-Longer Polymers
N/A: not applicable
OECD: Organisation for Economic Co-operation and Development
PNEC: predicted no effect concentration
PBT: Persistent bioaccumulative toxic
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
REACH: Registration, Evaluation, Authorisation of Chemicals
SVHC: substance of very high concern
TRGS Technische Regeln fuer Gefahrstoffe
UN: United Nations
VOC: Volatile Organic Compounds
VwVwS: Verwaltungsvorschrift wassergefaehrdender Stoffe
WGK: Wassergefaehrdungsklasse

Relevant H and EUH statements (number and full text)

H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
EUH066	Repeated exposure may cause skin dryness or cracking.

Further Information

Classification according to Regulation (EC) No 1272/2008 [CLP] - Classification procedure:
Health hazards: Calculation method.
Environmental hazards: Calculation method.
Physical hazards: On basis of test data and / or calculated and / or estimated.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)