

Safewing TKS 406B

0011

Page 1

Substance key: KFTKS406B
Version : 3 - 0 / USARevision Date: 08/06/2025
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SECTION 1. IDENTIFICATION

Identification of the company:	Clariant Corporation 500 East Morehead Street Charlotte, NC, 28202 Telephone No.: +1 704 331 7000
Information of the substance/preparation:	BU Care Chemicals Product Stewardship, +1-704-331-7710 e-mail: SDS.NORAM@clariant.com
Emergency tel. number:	+1 800-424-9300 CHEMTREC

Trade name:	Safewing TKS 406B	0011
Material number:	288910	
Primary product use:	Aircraft de-icing	
Chemical family:	Ethanediol mixture	

SECTION 2. HAZARDS IDENTIFICATION


GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**Hazards for the product as supplied**

Flammable liquids : Category 3
Acute toxicity (Oral) : Category 4
Eye irritation : Category 2A
Specific target organ toxicity : Category 2 (Kidney)
- repeated exposure (Oral)

Other hazards

No additional hazards are known except those derived from the labelling.

GHS label elements

Hazard pictograms : 

Signal word : Warning

Hazard statements : H226 Flammable liquid and vapour.
H302 Harmful if swallowed.
H319 Causes serious eye irritation.

Safewing TKS 406B

0011

Page 2

Substance key: KFTKS406B
Version : 3 - 0 / USA

Revision Date: 08/06/2025
Date of printing :06/17/2026

H373 May cause damage to organs (Kidney) through prolonged or repeated exposure if swallowed.

Precautionary statements

:

Prevention:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 Keep container tightly closed.

P240 Ground and bond container and receiving equipment.

P241 Use explosion-proof electrical/ ventilating/ lighting equipment.

P242 Use non-sparking tools.

P243 Take action to prevent static discharges.

P260 Do not breathe mist or vapours.

P264 Wash skin thoroughly after handling.

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

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.

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

P314 Get medical advice/ attention if you feel unwell.

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

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture

: Mixture

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
Ethanediol	107-21-1*	>= 80 - <= 100	TSC

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 3

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Ethanol	64-17-5*	$\geq 3 - \leq 7$	TSC
Methanol	67-56-1*	$\geq 0.1 - \leq 1$	TSC

* Indicates that the identifier is a CAS No.

TSC- the actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
- If inhaled : Move to fresh air.
If unconscious, place in recovery position and seek medical advice.
Never give anything by mouth to an unconscious person.
Get immediate medical advice/ attention.

Give oxygen or artificial respiration if needed.
- In case of skin contact : If on skin, rinse well with water.
Take off all contaminated clothing immediately.
If skin irritation occurs, seek medical advice/attention.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
If easy to do, remove contact lens, if worn.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Rinse mouth with water.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed.
Causes serious eye irritation.
May cause damage to organs through prolonged or repeated exposure if swallowed.
The possible health hazards known are those derived from the labelling (see corresponding section) and/or provided in this section.
The possible symptoms known are those derived from the labelling (see section 2).
- Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Safewing TKS 406B

0011

Page 4

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

- Suitable extinguishing media : Water spray jet
Alcohol-resistant foam
Dry powder
Carbon dioxide (CO₂)
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : High volume water jet
- Hazardous combustion products : Carbon oxides
Hydrocarbons
- Further information : In the event of fire and/or explosion do not breathe fumes. Do not allow run-off from fire fighting to enter drains or water courses.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for firefighters : Wear full protective clothing and self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Avoid contact with skin, eyes and clothing.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Remove all sources of ignition.
Use personal protective equipment.
Refer to protective measures listed in sections 7 and 8.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Only trained personnel should be involved in spill operations.
Wear suitable protective equipment. Ensure adequate ventilation. Remove all ignition sources. Contain spill and pump into proper containers using explosion-proof equipment.
Smaller spills may be recovered using an inert non-combustible absorbent material (sand, kieselguhr) and collected into suitable containers. Do not use organic absorbent material. Containers in which spilt substance has been collected must be properly labelled. Spill may be covered with an appropriate foam to hinder the formation of explosive vapours. Wash spill area. Do not allow to enter sewers, storm drains, surface waters or the soil.
Formation of explosive gas/air mixtures.
Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent, and place in a suitable container.
Contain spill and pump into proper containers using compatible equipment. Smaller spills may be recovered using inert absorbent material. Wash spill area. Wear prescribed protective gear.

Safewing TKS 406B

0011

Page 5

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

- Environmental precautions : The product should not be allowed to enter drains, water courses or the soil.
- Methods and materials for containment and cleaning up : Prevent product from entering drains.
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Non-sparking tools should be used.
Take measures to prevent the build up of electrostatic charge.
Clean contaminated surface thoroughly.
Treat recovered material as described in the section "Disposal considerations".

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
Observe the general rules of industrial fire protection
Vapours may form explosive mixture with air.
Vapours may spread long distances and ignite.
Electrical equipment should be protected to the appropriate standard.
- Advice on safe handling : Use only with adequate ventilation/personal protection.
For personal protection see section 8.
Avoid contact with skin, eyes and clothing.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Conditions for safe storage : Keep containers tightly closed in a dry, cool and well-ventilated place.
Handle and open container with care.
Keep away from sources of ignition - No smoking.
- Materials to avoid : When used and handled as intended, none.
- Further information on storage stability : Stable under recommended storage conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 6

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Ethanediol	107-21-1	C	50 ppm 125 mg/m ³	OSHA P0
		TWA (Vapour)	25 ppm	ACGIH
		STEL (Vapour)	50 ppm	ACGIH
		STEL (Inhalable fraction, Aerosol only)	10 mg/m ³	ACGIH
Ethanol	64-17-5	STEL	1,000 ppm	ACGIH
		TWA	1,000 ppm 1,900 mg/m ³	NIOSH REL
		TWA	1,000 ppm 1,900 mg/m ³	OSHA Z-1
		TWA	1,000 ppm 1,900 mg/m ³	OSHA P0
Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m ³	NIOSH REL
		ST	250 ppm 325 mg/m ³	NIOSH REL
		TWA	200 ppm 260 mg/m ³	OSHA Z-1
		STEL	250 ppm 325 mg/m ³	OSHA P0
		TWA	200 ppm 260 mg/m ³	OSHA P0

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Methanol	67-56-1	Methanol	Urine	End of shift (As soon as possible after exposure ceases)	15 mg/l	ACGIH BEI

Engineering measures : Use engineering controls such as local or general exhaust to maintain airborne concentrations below exposure limits.

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 7

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection Remarks	:	Butyl Rubber, PVC Or Neoprene.
Eye protection	:	Wear safety glasses with side shields or goggles.
Skin and body protection	:	Wear protective clothing, including long sleeves and gloves, to prevent skin contact.
Protective measures	:	Observe the usual precautions for handling chemicals. Avoid breathing dust or vapour.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Use protective skin cream before handling the product. Wash hands before breaks and at the end of workday. Take off immediately all contaminated clothing and wash it before reuse.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	colourless, clear
Odour	:	odourless
Odour Threshold	:	not tested.
pH	:	not tested.
Freezing point	:	-76 °F / -60 °C
Boiling point	:	248 °F / 120 °C (1,013.25 hPa)
Flash point	:	129 °F / 54 °C Method: closed cup
Evaporation rate	:	not tested.
Flammability (solid, gas)	:	Not applicable

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 8

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Self-ignition	:	The substance or mixture is not classified as self heating.
Burning number	:	Not applicable
Upper explosion limit / upper flammability limit	:	not tested.
Lower explosion limit / Lower flammability limit	:	not tested.
Vapour pressure	:	9.33 hPa (32 °F / 0 °C)
Relative vapour density	:	2
Density	:	1.092 - 1.097 g/cm ³ (68 °F / 20 °C)
Bulk density	:	Not applicable
Solubility(ies)		
Water solubility	:	completely miscible (68 °F / 20 °C)
Solubility in other solvents	:	not tested.
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature	:	689 °F / 365 °C
Decomposition temperature	:	not available
Viscosity		
Viscosity, dynamic	:	not tested.
Viscosity, kinematic	:	11 - 13 mm ² /s (68 °F / 20 °C)
Explosive properties	:	no data available
Oxidizing properties	:	Not applicable
Metal corrosion rate	:	< 6.25 mm/a
Minimum ignition energy	:	not tested.
Particle size	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
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Safewing TKS 406B

0011

Page 9

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Chemical stability	:	Stable
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use. Stable
Conditions to avoid	:	Strong oxidizers and strong acids. Heated surfaces, sparks, open flames and other sources of ignition.
Incompatible materials	:	Strong acids and oxidizing agents
Hazardous decomposition products	:	When handled and stored appropriately, no dangerous decomposition products are known

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Skin contact
Eye contact
Ingestion
Inhalation

Acute toxicity

Harmful if swallowed.

Product:

Acute oral toxicity	:	LC50 (Rat): 8,000 mg/kg Acute toxicity estimate: 571.76 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: > 200 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: 120,000 mg/kg Method: Calculation method Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

Components:

Ethenediol:

Acute oral toxicity	:	LD50 (Rat, male and female): Method: Other GLP: no Assessment: The component/mixture is moderately toxic after single ingestion.
Acute inhalation toxicity	:	LC50 (Rat, male and female): > 2.5 mg/l Exposure time: 6 h

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 10

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Test atmosphere: dust/mist

Method: Other

GLP: yes

Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Mouse, male and female): > 3,500 mg/kg
Method: Other
GLP: yes
Assessment: The substance or mixture has no acute dermal toxicity

Ethanol:

Acute oral toxicity : LD50 (Rat, male and female): 10,470 mg/kg
Method: OECD Test Guideline 401
GLP: no

Acute inhalation toxicity : LC50 (Rat, male and female): 124.7 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403
GLP: no

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Methanol:

Acute oral toxicity : LD50 (Rat, male and female): 1,187 - 2,769 mg/kg
Method: Other
GLP: no
Assessment: The component/mixture is toxic after single ingestion.

Acute inhalation toxicity : LC50 (Rat, male and female): 87.5 mg/l
Exposure time: 6 h
Test atmosphere: vapour
Method: Other
GLP: no
Assessment: The component/mixture is toxic after short term inhalation.

Acute dermal toxicity : Assessment: The component/mixture is toxic after single contact with skin.

Skin corrosion/irritation

Not classified

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 11

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Product:

Result : Repeated exposure may cause skin dryness or cracking.

Components:

Ethanediol:

Species : Rabbit
Exposure time : 20 h
Method : Other
Result : No skin irritation
GLP : no

Ethanol:

Species : Rabbit
Exposure time : 24 h
Method : OECD Test Guideline 404
Result : No skin irritation
GLP : yes

Methanol:

Species : Rabbit
Exposure time : <= 20 h
Method : Other
Result : No skin irritation
GLP : no

Serious eye damage/eye irritation

Causes serious eye irritation.

Product:

Result : irritating

Components:

Ethanediol:

Species : Rabbit
Result : No eye irritation
Exposure time : 24 h
Method : Other
GLP : no

Ethanol:

Species : Rabbit
Result : Irritating to eyes.
Method : OECD Test Guideline 405
GLP : No information available.

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 12

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Methanol:

Species : Rabbit
Result : No eye irritation
Method : Other
GLP : no

Respiratory or skin sensitisation

Skin sensitisation

Not classified

Respiratory sensitisation

Not classified

Product:

Remarks : not tested.

Components:

Ethanediol:

Test Type : Maximisation Test
Exposure routes : Dermal
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Not a skin sensitizer.
GLP : yes

Assessment : Harmful if swallowed.

Ethanol:

Exposure routes : Dermal
Species : Mouse
Method : Other
Result : Not a skin sensitizer.
GLP : No information available.

Methanol:

Test Type : Maximisation Test
Exposure routes : Dermal
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Not a skin sensitizer.
GLP : no

Assessment : Toxic if swallowed, in contact with skin or if inhaled.

Germ cell mutagenicity

Not classified

Product:

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 13

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Germ cell mutagenicity - Assessment : No information available.

Components:

Ethanediol:

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 33 - 5000 µg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test Type: Ames test
Test system: Escherichia coli
Concentration: 33 - 5000 µg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: Other
Result: negative
GLP: yes

Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Genotoxicity in vivo : Test Type: Dominant lethal assay
Species: Rat (male and female)
Strain: Fischer F344
Application Route: oral (feed)
Exposure time: 3 generation
Dose: 40 - 200 - 1000 mg/kg
Method: Other
Result: negative
GLP: no

Germ cell mutagenicity - Assessment : It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Ethanol:

Genotoxicity in vitro : Test Type: Ames test

Safewing TKS 406B

0011

Page 14

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: No information available.

Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: No information available.

Test Type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Method: OECD Test Guideline 473
Result: negative
GLP: No information available.

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Rat (male)
Strain: Other
Cell type: Bone marrow
Application Route: Drinking water
Method: OECD Test Guideline 474
Result: negative
GLP: No information available.

Germ cell mutagenicity - Assessment : It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Methanol:

Genotoxicity in vitro : Test Type: Micronucleus test
Test system: Chinese hamster lung cells
Concentration: 40 mg/ml
Method: Other
Result: negative
GLP: No information available.

Test Type: HGPRT assay
Test system: Chinese hamster lung cells
Concentration: 15,8 - 63,3 mg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: No information available.

Test Type: In vitro gene mutation study in bacteria
Test system: Salmonella typhimurium
Concentration: 5 - 5000 µg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 15

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Result: negative
GLP: No information available.

Genotoxicity in vivo : Test Type: Chromosome Aberration Test
Species: Mouse (male)
Strain: C57BL/6 x DBA/2
Application Route: Inhalation
Exposure time: 5 d, 6 h/day
Dose: 1,04 - 5,3 mg/l
Method: Other
Result: negative
GLP: No information available.

Germ cell mutagenicity - Assessment : It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Carcinogenicity

Not classified

Product:

Carcinogenicity - Assessment : No information available.

Components:

Ethanediol:

Species : Mouse, male and female
Application Route : oral (feed)
Exposure time : 2 a
Dose : 6250-12500-25000-50000 ppm
Control Group : yes
Frequency of Treatment : daily
NOAEL : 1,500 mg/kg bw/day
Method : Other
GLP : yes

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

Ethanol:

Species : Mouse, female
Application Route : Drinking water
Exposure time : 24 month(s)
Dose : 0, 2.5 and 5% in drinking wate
Control Group : yes
Method : 4,400 mg/kg bw/day
GLP : OPPTS 870.4200
GLP : yes

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 16

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Methanol:

Species : Rat, male and female
Application Route : Inhalation
Exposure time : 24
Dose : 0,013 - 0,13 - 1,3 mg/l
Control Group : yes
Frequency of Treatment : 20 h/day
NOAEL : >= 1.3 mg/l
Method : OECD Test Guideline 453
GLP : No information available.

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

IARC Group 1: Carcinogenic to humans
Ethanol 64-17-5

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified

Product:

Reproductive toxicity - Assessment : No information available.

No information available.

Components:

Ethanediol:

Effects on fertility : Test Type: Three-generation study
Species: Rat, male and female
Strain: Fischer F344
Application Route: oral (feed)
Dose: 40 - 200 - 1000
General Toxicity - Parent: NOAEL: > 1,000 mg/kg body weight
General Toxicity F1: NOAEL: > 1,000 mg/kg body weight
General Toxicity F2: NOAEL: > 1,000 mg/kg body weight
Method: Other
GLP: no

Effects on foetal development : Test Type: reproductive and developmental toxicity study
Species: Rat, female
Strain: Sprague-Dawley
Application Route: oral (gavage)

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 17

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Dose: 150 - 500 - 1000 - 2500 mg/kg
Duration of Single Treatment: 9 d
General Toxicity Maternal: NOEL: 1,500 mg/kg body weight
Teratogenicity: NOEL: 150 mg/kg body weight
Method: Other
GLP: yes

Reproductive toxicity - Assessment : No reproductive toxicity to be expected.
No teratogenic effects to be expected.

Ethanol:

Effects on fertility : Test Type: Two-generation study
Species: Mouse, male and female
Strain: CD1
Application Route: Drinking water
Dose: 5, 10 and 15% v/v in water
Duration of Single Treatment: 126 d
General Toxicity - Parent: NOAEL: 15 %
General Toxicity F1: NOAEL: 10 %
General Toxicity F2: NOAEL: < 15 %
Method: OECD Test Guideline 416
GLP: No information available.

Effects on foetal development : Test Type: Pre-natal
Species: Rat, female
Strain: Sprague-Dawley
Application Route: Inhalation
Dose: 10000, 16000, 20000 ppm nom.
Duration of Single Treatment: 19 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: NOAEL: 16,000 ppm
Teratogenicity: NOAEL: 20,000 ppm
Method: OECD Test Guideline 414
GLP: No information available.

Reproductive toxicity - Assessment : No reproductive toxicity to be expected.
No teratogenic effects to be expected.

Methanol:

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Strain: Sprague-Dawley
Application Route: Inhalation
Dose: 0,013 - 0,13 - 1,3 mg/l
Duration of Single Treatment: 20 h
General Toxicity - Parent: NOAEC: 1.3 mg/l
General Toxicity F1: NOAEC: 0.13 mg/l
General Toxicity F2: NOAEC: 0.13 mg/l
Method: OECD Test Guideline 416
GLP: No information available.

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 18

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Effects on foetal development

: Test Type: Pre-natal
Species: Rat, female
Strain: Sprague-Dawley
Application Route: Inhalation
Dose: 0,27 - 1,33 - 6,65 mg/l
Duration of Single Treatment: 22.7 h
General Toxicity Maternal: NOAEC: 1.33 mg/l
Teratogenicity: NOAEC F1: 1.33 mg/l
Method: OECD Test Guideline 414
GLP: No information available.

Test Type: Pre-natal
Species: Rat
Strain: Long-Evans
Application Route: oral (gavage)
Dose: 1027 - 2054 - 4108 mg/kg
Frequency of Treatment: 1
General Toxicity Maternal: LOAEL: 1,027 mg/kg body weight
Teratogenicity: LOAEL F1: 1,027 mg/kg body weight
Method: OECD Test Guideline 414
GLP: No information available.

Reproductive toxicity - Assessment

: No reproductive toxicity to be expected.
No teratogenic effects to be expected.

STOT - single exposure

Not classified

Product:

Remarks : not tested.

Components:

Ethanediol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

Ethanol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

Methanol:

Target Organs : Eyes, Central nervous system
Assessment : Causes damage to organs.

STOT - repeated exposure

May cause damage to organs (Kidney) through prolonged or repeated exposure if swallowed.

Safewing TKS 406B

0011

Page 19

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Components:**Ethanediol:**

Exposure routes : Oral
Target Organs : Kidney
Assessment : May cause damage to organs through prolonged or repeated exposure.

Ethanol:

Remarks : no data available

Methanol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity**Product:**

Remarks : no data available

Components:**Ethanediol:**

Species : Rat, male
NOAEL : 150 mg/kg bw/day
Application Route : oral (feed)
Exposure time : 16 w
Number of exposures : daily
Dose : 50 - 150 - 500 - 1000 mg/kg
Control Group : yes
Method : OECD Test Guideline 408
GLP : No information available.

Species : Dog, male
NOAEL : 2.200 - 4.400 mg/kg bw/day
Application Route : Dermal
Exposure time : 4 w
Number of exposures : daily
Dose : 2 - 4 mL/kg bw
Control Group : yes
Method : OECD Test Guideline 410
GLP : yes

Species : Rat, male and female
NOAEL : 200 mg/kg bw/day
Application Route : oral (gavage)
Exposure time : 33 d
Number of exposures : daily
Dose : 220, 660, 2000 mg/kg bw/day
Control Group : yes
Method : OECD Test Guideline 407

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 20

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Species : Rat, male
NOAEL : 150 mg/kg bw/day
Application Route : oral (feed)
Exposure time : 12 months
Number of exposures : daily
Dose : 50, 150, 300, 400 mg/kg bw/day
Control Group : yes
Method : OECD Test Guideline 452

Repeated dose toxicity -
Assessment : Harmful if swallowed.

Ethanol:

Species : Rat, male and female
LOAEL : ca. 3200 mg/kg
Application Route : oral (gavage)
Exposure time : 7 weeks or 14 weeks
Number of exposures : twice daily, 7 days a week
Dose : 5, 10, 20 ml/kg
Control Group : yes
Method : OECD Test Guideline 408
GLP : No information available.

Species : Rat, male
NOEL : > 20 mg/l
Application Route : inhalation (vapour)
Exposure time : 3, 6, 9, 26 day groups
Number of exposures : continuous
Dose : >20 mg/l
Control Group : yes
Method : Other
GLP : No information available.

Methanol:

Species : Monkey, male
LOAEL : 2,340 mg/kg
Application Route : oral (gavage)
Exposure time : 3 d
Number of exposures : daily
Dose : 2340 mg/kg
Control Group : no data available
Method : Other
GLP : No information available.
Remarks : Significant toxicity observed in testing

Species : Rat, male and female
NOEL : 0.13 mg/l
LOAEL : 1.3 mg/l
Application Route : Inhalation
Test atmosphere : vapour

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 21

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Exposure time : 12 m
Number of exposures : 20 h/day
Dose : 0,013 - 0,13 - 1,3 mg/l
Control Group : yes
Method : OECD Test Guideline 453
GLP : No information available.

Species : Rat, male and female
NOAEL : 6.66 mg/l
Application Route : Inhalation
Test atmosphere : vapour
Exposure time : 4 w
Number of exposures : 6 h/d, 5 d/wk
Dose : 0,663 - 2,65 - 6,63 mg/l
Control Group : yes
Method : OECD Test Guideline 412
GLP : No information available.

Application Route : Skin contact
Remarks : not tested.

Repeated dose toxicity - Assessment : Toxic if swallowed, in contact with skin or if inhaled.

Aspiration toxicity

Not classified

Product:

no data available

Components:

Ethanediol:

No aspiration toxicity classification

Ethanol:

No aspiration toxicity classification

Methanol:

No aspiration toxicity classification

Experience with human exposure

Product:

General Information : The possible symptoms known are those derived from the labelling (see section 2).

Safewing TKS 406B

0011

Page 22

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish : Remarks: no data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: no data available

Toxicity to algae/aquatic plants : Remarks: no data available

Toxicity to microorganisms : Remarks: no data available

Components:**Ethanediol:**Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 72,860 mg/l
Exposure time: 96 h
Test Type: static test
Analytical monitoring: yes
Method: EPA
GLP: no
Remarks: The details of the toxic effect relate to the nominal concentration.Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 202
GLP: yesToxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 6,500 - 13,000 mg/l
End point: Growth rate
Exposure time: 7 d
Test Type: static test
Analytical monitoring: no data available
Method: EPA
GLP: No information available.Toxicity to fish (Chronic toxicity) : Chronic Toxicity Value (Fish): 2,629 mg/l
End point: Other
Exposure time: 30 d
Method: Other
GLP: no
Remarks: The value is given based on a SAR/AAR approach using OECD Toolbox, DEREK, VEGA QSAR models (CAESAR models), etc.

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 23

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia spec.): 8,590 mg/l
End point: Reproduction rate
Exposure time: 7 d
Test Type: semi-static test
Analytical monitoring: yes
Method: Other
GLP: No information available.
Remarks: The details of the toxic effect relate to the nominal concentration.
- Toxicity to microorganisms : EC20 (activated sludge, domestic): > 1,995 mg/l
End point: Bacteria toxicity (respiration inhibition)
Exposure time: 0.5 h
Analytical monitoring: no
Method: ISO 8192
GLP: no
- Ethanol:**
- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 15,300 mg/l
End point: mortality
Exposure time: 96 h
Test Type: flow-through test
Analytical monitoring: yes
Method: Other
GLP: No information available.
- LC50 (Oncorhynchus mykiss (rainbow trout)): 11,200 mg/l
End point: mortality
Exposure time: 24 h
Test Type: flow-through test
Analytical monitoring: no
Method: Other
GLP: No information available.
- Toxicity to daphnia and other aquatic invertebrates : LC50 (Ceriodaphnia dubia (water flea)): 5,012 mg/l
End point: mortality
Exposure time: 48 h
Test Type: static test
Analytical monitoring: no
Method: Other
GLP: No information available.
- EC50 (Daphnia magna (Water flea)): > 10,000 mg/l
End point: Immobilization
Exposure time: 48 h
Method: DIN 38412
GLP: no
- Toxicity to algae/aquatic plants : EC50 (Chlorella vulgaris (Fresh water algae)): 275 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 24

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

- EC10 (Chlorella vulgaris (Fresh water algae)): 11.5 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
- Toxicity to fish (Chronic toxicity) : NOEC (Danio rerio (zebra fish)): 250 mg/l
End point: Other
Exposure time: 120 h
Test Type: semi-static test
Method: OECD Test Guideline 212
GLP: No information available.
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: no data available
- Toxicity to microorganisms : EC50 (Natural microorganism): 5,800 mg/l
Exposure time: 4 h
Test Type: static test
- Toxicity to soil dwelling organisms : Remarks: Not applicable
- Plant toxicity : Remarks: Not applicable
- Sediment toxicity : Remarks: Not applicable
- Toxicity to terrestrial organisms : Remarks: Not applicable
- Methanol:**
- Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 15,400 mg/l
End point: mortality
Exposure time: 96 h
Test Type: flow-through test
Analytical monitoring: yes
Method: EPA
GLP: No information available.
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 18,260 mg/l
End point: Immobilization
Exposure time: 96 h
Test Type: semi-static test
Analytical monitoring: no data available
Method: OECD Test Guideline 202
GLP: No information available.
Remarks: The details of the toxic effect relate to the nominal concentration.
- Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (microalgae)): ca. 22,000 mg/l

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 25

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

- End point: Growth rate
Exposure time: 96 h
Test Type: static test
Analytical monitoring: no data available
Method: OECD Test Guideline 201
GLP: No information available.
- Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 446.7 mg/l
Exposure time: 28 d
Method: Other
GLP: no
Remarks: The value is given based on a SAR/AAR approach using OECD Toolbox, DEREK, VEGA QSAR models (CAESAR models), etc.
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 208 mg/l
End point: Reproduction rate
Exposure time: 21 d
Method: calculated
GLP: no
Remarks: The value is given based on a SAR/AAR approach using OECD Toolbox, DEREK, VEGA QSAR models (CAESAR models), etc.
- Toxicity to microorganisms : IC50 (activated sludge): > 1,000 mg/l
End point: Bacteria toxicity (growth inhibition)
Exposure time: 3 h
Test Type: aquatic
Analytical monitoring: yes
Method: OECD Test Guideline 209
GLP: No information available.
- Toxicity to soil dwelling organisms : LC50 (Eisenia fetida (earthworms)): > 1 mg/cm²
Exposure time: 48 h
End point: mortality
Method: OECD Test Guideline 207
GLP: No information available.
- NOEC (Folsomia candida): 10000 mg/kg dry weight (d.w.)
Exposure time: 28 d
End point: mortality
Method: Other
GLP: No information available.
- Plant toxicity : IC50: ca. 41,000 mg/l
Exposure time: 3 d
End point: emergence
Species: Lactuca sativa (lettuce)
Analytical monitoring: no data available
Method: Other
GLP: no
- Sediment toxicity : Remarks: Not applicable

Safewing TKS 406B

0011

Page 26

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Persistence and degradability**Product:**

Biodegradability : Remarks: not tested.

Biochemical Oxygen Demand (BOD) : Remarks: not tested.

Components:**Ethanediol:**Biodegradability : aerobic
Inoculum: activated sludge
Concentration: 53 mg/l
Dissolved organic carbon (DOC)
Result: Readily biodegradable.
Biodegradation: 90 - 100 %
Exposure time: 10 d
Method: OECD Test Guideline 301A
GLP: yes**Ethanol:**Biodegradability : aerobic
Result: Readily biodegradable.
Biodegradation: 84 %
Exposure time: 20 d**Methanol:**Biodegradability : aerobic
Inoculum: activated sludge
Concentration: 3 - 10 mg/l
Biochemical Oxygen Demand (BOD)
Result: Readily biodegradable.
Biodegradation: 95 %
Exposure time: 20 d
Method: Closed Bottle test
GLP: noaerobic
Inoculum: activated sludge
Concentration: 4 - 200 g/l
Biochemical Oxygen Demand (BOD)
Result: Readily biodegradable.
Biodegradation: 82.7 %
Exposure time: 5 d
Method: Other
GLP: noPhotodegradation : Rate constant: 9.32E-13 cm³/s

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 27

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Degradation (indirect photolysis): 50 % Degradation half life:
17.2 d
GLP: no

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: not tested.

Components:

Ethanediol:

Bioaccumulation : Remarks: Due to the low logPow bioaccumulation is not expected

Partition coefficient: n-octanol/water : log Pow: -1.36
Method: estimated
GLP: no

Ethanol:

Bioaccumulation : Bioconcentration factor (BCF): 0.66
Method: calculated
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: -0.35 (75 °F / 24 °C)
pH: 7.4
Method: OECD Test Guideline 107

Methanol:

Bioaccumulation : Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): < 10
Exposure time: 72 h
Method: Other
GLP: No information available.

Partition coefficient: n-octanol/water : log Pow: -0.77
Method: No information available.
GLP: No information available.

Mobility in soil

Product:

Distribution among environmental compartments : Remarks: not tested.

Components:

Ethanediol:

Distribution among environmental compartments : Adsorption/Soil
Medium: water - soil

SAFETY DATA SHEET

Safewing TKS 406B

0011

Page 28

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

log Koc: 0
Method: other (calculated)

Ethanol:

Distribution among environmental compartments : adsorption
Medium: water - soil
Remarks: Not expected to adsorb on soil.

Methanol:

Distribution among environmental compartments : Adsorption/Soil
Medium: water - soil
Koc: 1
Method: other (calculated)

Other adverse effects

Product:

Environmental fate and pathways : Remarks: no data available

Additional ecological information : Biologically degradable, when diluted may be degraded in biological purification plants
Harmful effects to fish and bacteria: not harmful

Components:

Ethanediol:

Environmental fate and pathways : not available

Additional ecological information : Do not allow to enter ground water, waterways or waste water.

Ethanol:

Additional ecological information : The product should not be allowed to enter drains, water courses or the soil.

Methanol:

Environmental fate and pathways : not available

Additional ecological information : Do not allow to enter ground water, waterways or waste water.

Safewing TKS 406B

0011

Page 29

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

RCRA - Resource Conservation and Recovery Act Authorization Act : Yes -- If it becomes a waste as sold.

Waste Code : D001

Waste from residues : Product should be taken to a suitable and authorized waste disposal site in accordance with relevant regulations and if necessary after consultation with the waste disposal operator and/or the competent Authorities

Contaminated packaging : Packaging that cannot be cleaned should be disposed of as product waste

SECTION 14. TRANSPORT INFORMATION**DOT Regulation:**

UN/NA-number: NA 1993

Proper shipping name: Combustible liquid, n.o.s.

Technical Name: Ethanol
Methanol

Primary hazard class: C

Packing group: III

Reportable Quantity: 2,668.000 kg Ethylene Glycol

Emergency Response Guide: 128

IATA

UN/ID number: UN 1993

Proper shipping name: Flammable liquid, n.o.s.

Hazard inducer(s): Ethanol
Methanol

Primary risk: 3

Packing group: III

Remarks: Shipment permitted

IMDG

UN no.: UN 1993

Proper shipping name: Flammable liquid, n.o.s.

Hazard inducer(s): Ethanol
Methanol

Primary risk: 3

Packing group: III

EmS: F-E S-E

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

SECTION 15. REGULATORY INFORMATION**CERCLA Reportable Quantity**

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Ethanediol	107-21-1	5000	5882

A characteristic waste RQ of 100 lbs applies to this product in a waste form: D001

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Specific target organ toxicity (single or repeated exposure)
Serious eye damage or eye irritation

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Ethanediol 107-21-1 >= 70 - < 90 %

Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

Ethanediol 107-21-1 >= 70 - < 90 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Ethanediol 107-21-1 >= 70 - < 90 %
Ethanol 64-17-5 >= 1 - < 5 %

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

The components of this product are reported in the following inventories:

TCSI : On the inventory, or in compliance with the inventory

DSL : All components of this product are on the Canadian DSL

AIC : On the inventory, or in compliance with the inventory

Safewing TKS 406B

0011

Page 31

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

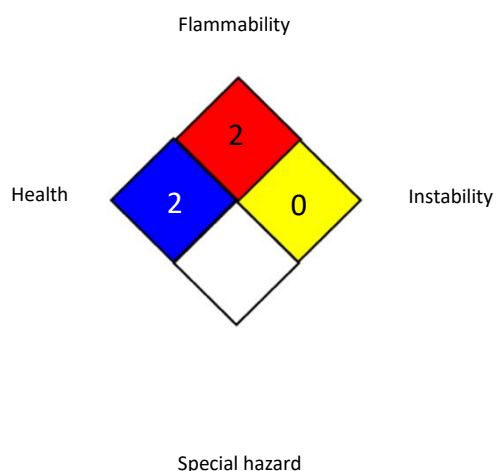
Date of printing :06/17/2026

TSCA	:	On TSCA Inventory, All components are compliant with the TSCA Inventory Notification (Active) rule.
ENCS	:	On the inventory, or in compliance with the inventory
ISHL	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
NZIoC	:	Not in compliance with the inventory
TECI	:	On the inventory, or in compliance with the inventory

TSCA list

TSCA - 5(a) Significant New Use Rule List of Chemicals: No substances are subject to a Significant New Use Rule.

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D): No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION**Further information****NFPA 704:****Full text of other abbreviations**

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

SAFETY DATA SHEET

CLARIANT^E

Safewing TKS 406B

0011

Page 32

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA P0 / TWA	:	8-hour time weighted average
OSHA P0 / STEL	:	Short-term exposure limit
OSHA P0 / C	:	Ceiling limit
OSHA Z-1 / TWA	:	8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

SAFETY DATA SHEET



Safewing TKS 406B

0011

Page 33

Substance key: KFTKS406B

Revision Date: 08/06/2025

Version : 3 - 0 / USA

Date of printing :06/17/2026

Observe national and local legal requirements

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Revision Date : 08/06/2025

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