SAFETY DATA SHEET

SANCTUM®

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	04.05.2023	50001281	Date of first issue: 04.05.2023

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

Product name : SANCTUM®

Manufacturer or supplier's details

Company : FMC Corporation

Address : 2929 WALNUT ST
PHILADELPHIA PA 19104
USA

Telephone : (215) 299-6000

E-mail address : SDS-Info@fmc.com

Emergency telephone : +44 20 3885 0382 (CHEMTREC's European Regional Toll-Free Number)
1 703 / 741-5970 (CHEMTREC - International)
1 703 / 527-3887 (CHEMTREC - Alternate)

Medical Emergency Number : All other countries: +1 651 / 632-6793 (Collect)

Recommended use of the chemical and restrictions on use

Recommended use : Insecticide

Restrictions on use : Use as recommended by the label.

2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral) : Category 3

Serious eye damage : Category 1

Respiratory sensitization : Category 1

Skin sensitization : Category 1

Specific target organ toxicity - repeated exposure : Category 2 (Nervous system)

Aspiration hazard : Category 1

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

GHS-Labeling

Hazard pictograms :

Signal Word : Danger

Hazard Statements :
H301 Toxic if swallowed.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H373 May cause damage to organs (Nervous system) through prolonged or repeated exposure.
H373 May cause damage to organs (Respiratory system) through prolonged or repeated exposure if inhaled.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements :

Prevention:

P260 Do not breathe mist or vapors.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.

Response:

P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P331 Do NOT induce vomiting.
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor.
P391 Collect spillage.

Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Components

Chemical name	CAS-No.	Classification	MAC value mg/m3 / TSEL value	Concentration (% w/w)
malathion (ISO) [containing ≤	121-75-5	Acute Tox.4;	No data available	>= 50 - < 70

0,03 % isomalathion]		H302 Acute Tox.5; H333 Skin Sens.1; H317 Aquatic Acute1; H400 Aquatic Chronic1; H410		
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5	Asp. Tox.1; H304 Aquatic Acute2; H401	No data available	>= 10 - < 20
Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, mono-C8-10-alkyl ethers, phosphates	68130-47-2	Skin Corr.1B; H314 Eye Dam.1; H318 Aquatic Acute2; H401	No data available	>= 5 - < 10
maleic anhydride	108-31-6	Acute Tox.4; H302 Acute Tox.5; H313 Skin Corr.1B; H314 Eye Dam.1; H318 Skin Sens.1; H317 STOT RE1; H372 (Respiratory system) Aquatic Acute3; H402	MPC-STEL: 1 mg/m3 Substances which require special skin and eye protection, Allergens, Class 2 - Highly dangerous Data Source: RU OEL	>= 3 - < 5
GAMMA-CYHALOTHRIN	76703-62-3	Acute Tox.3; H301 Acute Tox.1; H330 Acute Tox.4; H312 Skin Sens.1; H317 STOT RE1; H372 (Nervous system) Aquatic Acute1; H400 Aquatic Chronic1; H410	No data available	>= 1 - < 2,5

For explanation of abbreviations see section 16.

4. FIRST AID MEASURES

General advice	:	Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.
If inhaled	:	Call a physician or poison control center immediately. If unconscious, place in recovery position and seek medical advice.
In case of skin contact	:	If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
In case of eye contact	:	Small amounts splashed into eyes can cause irreversible tissue damage and blindness. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Continue rinsing eyes during transport to hospital. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.
Most important symptoms and effects, both acute and delayed	:	Exposure may result in nausea, vomiting, tremors, cramps, weakness, shortness of breath, a slowed heart rate, headache, abdominal pain, and diarrhea. Toxic if swallowed. May be fatal if swallowed and enters airways. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause damage to organs through prolonged or repeated exposure.
Protection of first-aiders	:	Avoid inhalation, ingestion and contact with skin and eyes.
Notes to physician	:	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point	:	130 °C
Ignition temperature	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Suitable extinguishing media	:	Dry chemical, CO2, water spray or regular foam.
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	phosphorus oxides Carbon oxides Sulfur oxides Nitrogen oxides (NOx) Fluorinated compounds Chlorinated compounds Hydrogen chloride Hydrogen fluoride
Specific extinguishing methods	:	Remove undamaged containers from fire area if it is safe to do so. Use a water spray to cool fully closed containers.
Further information	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Evacuate personnel to safe areas. Use personal protective equipment. If it can be safely done, stop the leak. Do not touch or walk through the spilled material. Never return spills in original containers for re-use. Possible need to alert the neighborhood. Mark the contaminated area with signs and prevent access to

unauthorized personnel.

Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Never return spills in original containers for re-use. Collect as much of the spill as possible with a suitable absorbent material. Pick up and transfer to properly labeled containers. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. To avoid spills during handling keep bottle on a metal tray. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Conditions for safe storage	:	Prevent unauthorized access. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.
Further information on storage conditions	:	Protect from frost and extreme heat. Store in closed, labelled containers. The storage room should be constructed of incombustible material, closed, dry, ventilated and with impermeable floor, without access of unauthorised persons or children. A warning sign reading “POISON” is recommended. The room should only be used for storage of chemicals. Food, drink, feed and seed should not be present. A hand wash station should be available.
Materials to avoid	:	Do not store near acids.

Recommended storage temperature : 5 - 25 °C

Further information on storage stability : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
maleic anhydride	108-31-6	MPC-STEL (mixture of vapour and aerosol)	1 mg/m3	RU OEL
	Further information: Substances which require special skin and eye protection, Allergens, Class 2 - Highly dangerous			

Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Hand protection

Material : Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Protective measures : Plan first aid action before beginning work with this product.
Always have on hand a first-aid kit, together with proper instructions.
Wear suitable protective equipment.
When using do not eat, drink or smoke.
In the context of professional plant protection use as recommended, the end user must refer to the label and the instructions for use.

Hygiene measures : Avoid contact with skin, eyes and clothing.
Do not inhale aerosol.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	liquid
Color	:	yellow
Odor	:	aromatic
Odor Threshold	:	No data available
pH	:	2,49 (1% solution in water)
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	130 °C
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Relative density	:	1,178 (20 °C)
Density	:	1,18 g/cm3
Solubility(ies)		
Water solubility	:	dispersible
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	48 mPa.s (20 °C)
		18 mPa.s (40 °C)

Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	No data available

10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	Malathion will decompose rapidly when heated to temperatures above 140°C, significantly increasing the risk of explosion. Direct local heating such as electric heating or by steam must be avoided. The decomposition is dependent on time as well as temperature due to self-accelerating exothermic and autocatalytic reactions. The reactions involve rearrangements and polymerisation releasing volatile malodorous and inflammable compounds such as dimethyl sulphide and methyl mercaptan.
Possibility of hazardous reactions	:	No decomposition if stored and applied as directed.
Conditions to avoid	:	Heat, flames and sparks. Heating of the product will produce harmful and irritant vapours. Protect from frost, heat and sunlight.
Incompatible materials	:	Avoid strong acids, bases, and oxidizers. Strong alkalis, amines and strong oxidising compounds. The product can corrode metals (but does not meet the criteria for classification).

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Toxic if swallowed.
Harmful if inhaled.

Product:

Acute oral toxicity	:	LD50 Oral (Rat): 55 mg/kg Method: OECD Test Guideline 425
Acute inhalation toxicity	:	Acute toxicity estimate: 2,01 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
Acute dermal toxicity	:	LD50 Dermal (Rat): > 5.000 mg/kg

Method: OECD Test Guideline 402

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Acute oral toxicity : LD50 (Rat): 1.857 mg/kg
Method: OECD Test Guideline 401
Remarks: Based on data from similar materials

LD50 (Rat): > 5.000 mg/kg
Method: FIFRA 81.01

Acute inhalation toxicity : LC50 (Rat): > 5,02 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: EPA OPP 81 - 3
Assessment: The component/mixture is minimally toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rabbit): > 5.000 mg/kg
Method: FIFRA 81.02

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Acute oral toxicity : LD50 (Rat, male and female): > 5.000 mg/kg
Method: OECD Test Guideline 401
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat): > 4,688 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 2.000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

maleic anhydride:

Acute oral toxicity : LD50 (Rat, male and female): 1.090 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rabbit, female): 2.620 mg/kg

GAMMA-CYHALOTHRIN:

Acute oral toxicity : LD50 (Rat, female): 55 mg/kg
Method: OECD Test Guideline 401

LD50 (Rat, male): > 50 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat, female): 0,028 mg/l

Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rat, female): 1.650 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation

Causes skin irritation.

Product:

Assessment : Irritating to skin.
Method : OECD Test Guideline 404
Result : Moderate skin irritation

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Method : FIFRA 81.05
Result : slight irritation

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Species : Rabbit
Assessment : Repeated exposure may cause skin dryness or cracking.
Result : No skin irritation
Remarks : Minimal effects that do not meet the threshold for classification.
Based on data from similar materials

Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, mono-C8-10-alkyl ethers, phosphates:

Method : in vitro skin corrosion test
Result : Corrosive after 3 minutes to 1 hour of exposure

maleic anhydride:

Species : Rabbit
Exposure time : 4 h
Result : Corrosive after 3 minutes to 1 hour of exposure

GAMMA-CYHALOTHRIN:

Species : Rabbit
Assessment : Not classified as irritant
Method : OECD Test Guideline 404
Result : slight or no skin irritation.

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Assessment : Risk of serious damage to eyes.
Method : OECD Test Guideline 405

Remarks : May cause irreversible eye damage.

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Result : slight irritation
Method : FIFRA 81.04

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Species : Rabbit
Assessment : No eye irritation
Remarks : Minimal effects that do not meet the threshold for classification.
Based on data from similar materials

Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, mono-C8-10-alkyl ethers, phosphates:

Result : Irreversible effects on the eye

maleic anhydride:

Species : Rabbit
Result : Irreversible effects on the eye

GAMMA-CYHALOTHRIN:

Species : Rabbit
Result : Slight or no eye irritation
Assessment : Not classified as irritant
Method : OECD Test Guideline 405
Remarks : Product dust may be irritating to eyes, skin and respiratory system.

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Product:

Assessment : May cause sensitization by skin contact.
Result : Causes skin sensitization.

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Test Type : Buehler Test
Method : FIFRA 81.06
Result : Does not cause skin sensitization.

Test Type : Local lymph node assay (LLNA)
Method : OECD Test Guideline 429

Result : Does not cause skin sensitization.

Test Type : Magnussen-Kligman test
Method : OECD Test Guideline 406
Result : May cause sensitization by skin contact.
Remarks : Based on data from similar materials

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Test Type : Maximization Test
Species : Guinea pig
Result : Not a skin sensitizer.
Remarks : Based on data from similar materials

maleic anhydride:

Test Type : Local lymph node assay (LLNA)
Routes of exposure : Dermal
Species : Mouse
Assessment : The product is a skin sensitizer, sub-category 1A.
Method : OECD Test Guideline 429

GAMMA-CYHALOTHRIN:

Assessment : May cause sensitization by skin contact.
Method : OECD Test Guideline 406
Result : May cause sensitization by skin contact.

Germ cell mutagenicity

Not classified based on available information.

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Genotoxicity in vitro : Test Type: Ames test
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Result: positive
Remarks: Based on data from similar materials

Test Type: unscheduled DNA synthesis assay
Result: negative
Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: chromosome aberration assay
Species: Rat
Result: negative
Remarks: Based on data from similar materials

Test Type: unscheduled DNA synthesis assay
Species: Rat
Result: negative
Remarks: Based on data from similar materials

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Genotoxicity in vitro	:	Test Type: reverse mutation assay Method: OECD Test Guideline 471 Result: negative Remarks: Based on data from similar materials
Genotoxicity in vivo	:	Test Type: Bone marrow chromosome aberration. Species: Rat Application Route: inhalation (vapor) Result: negative

maleic anhydride:

Genotoxicity in vitro	:	Test Type: reverse mutation assay Method: OECD Test Guideline 471 Result: negative Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative Remarks: Based on data from similar materials
Genotoxicity in vivo	:	Test Type: Bone marrow chromosome aberration. Species: Rat (male and female) Application Route: Inhalation Method: OECD Test Guideline 475 Result: negative
Germ cell mutagenicity - Assessment	:	Weight of evidence does not support classification as a germ cell mutagen.

GAMMA-CYHALOTHRIN:

Germ cell mutagenicity - Assessment	:	Animal testing did not show any mutagenic effects.

Carcinogenicity

Not classified based on available information.

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Species	:	Rat
Application Route	:	Ingestion
Exposure time	:	24 month(s)
NOAEL	:	6.000 ppm
Result	:	positive
Remarks	:	Probably carcinogenic to humans (IARC 2A)

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Species	:	Rat, male and female
Application Route	:	inhalation (vapor)
Exposure time	:	12 month(s)

NOAEC	:	1,8 mg/l
Result	:	negative
Remarks	:	Based on data from similar materials
Carcinogenicity - Assessment	:	Not classifiable as a human carcinogen.

maleic anhydride:

Species	:	Rat, male and female
Application Route	:	Oral
Exposure time	:	2 Years
Dose	:	0, 10, 32, 100 mg/kg body weight
NOEL	:	10 mg/kg body weight
Method	:	OECD Test Guideline 451
Result	:	negative
Carcinogenicity - Assessment	:	Weight of evidence does not support classification as a carcinogen

GAMMA-CYHALOTHRIN:

Carcinogenicity - Assessment	:	Animal testing did not show any carcinogenic effects., Based on data from similar materials

Reproductive toxicity

Not classified based on available information.

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Effects on fertility	:	Test Type: Two-generation study Species: Rat, male and female General Toxicity F1: NOAEL: 132 - 152 mg/kg bw/day Symptoms: Reduced offspring weight gain.
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat General Toxicity Maternal: NOAEL: 400 mg/kg bw/day Teratogenicity: NOAEL: 800 mg/kg bw/day Result: No teratogenic effects. Test Type: Embryo-fetal development Species: Rabbit General Toxicity Maternal: NOAEL: 25 mg/kg bw/day Teratogenicity: NOAEL: 25 mg/kg bw/day Result: No teratogenic effects.
Reproductive toxicity - Assessment	:	Animal testing showed no reproductive toxicity.

maleic anhydride:

Effects on fertility	:	Test Type: Two-generation study Species: Rat, male and female

Application Route: Oral
Dose: 0, 20, 55, and 150 milligram per kilogram
General Toxicity Parent: LOAEL: 20 mg/kg body weight
Fertility: NOEL: 55 mg/kg body weight
Method: OECD Test Guideline 416
Result: negative

Effects on fetal development : Species: Rat
Application Route: Oral
Duration of Single Treatment: 15 d
General Toxicity Maternal: NOAEL: >= 140 mg/kg body weight
Teratogenicity: NOAEL: >= 140 mg/kg body weight
Embryo-fetal toxicity.: NOAEL: >= 140 mg/kg body weight
Method: OECD Test Guideline 414
Result: negative

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

GAMMA-CYHALOTHRIN:

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT-single exposure

Not classified based on available information.

Components:

GAMMA-CYHALOTHRIN:

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

STOT-repeated exposure

May cause damage to organs (Nervous system) through prolonged or repeated exposure.
May cause damage to organs (Respiratory system) through prolonged or repeated exposure if inhaled.

Components:

maleic anhydride:

Routes of exposure : inhalation (dust/mist/fume)
Target Organs : Respiratory system
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

GAMMA-CYHALOTHRIN:

Target Organs : Nervous system
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Repeated dose toxicity

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Species	:	Rat
LOAEL	:	34,4 mg/kg
Application Route	:	Oral - feed
Exposure time	:	90 d
Target Organs	:	Nervous system
Symptoms	:	cholinesterase inhibition

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Species	:	Rat, male and female
NOAEC	:	0,9 - 1,8 mg/l
Application Route	:	inhalation (vapor)
Exposure time	:	12 months

maleic anhydride:

Species	:	Dog, male and female
NOAEL	:	60 mg/kg
Application Route	:	Oral
Exposure time	:	90 d
Dose	:	0, 20, 40, or 60 mg/kg bw/day
Method	:	OECD Test Guideline 409

Species	:	Rat, male and female
NOEL	:	10 mg/kg
Application Route	:	Oral
Exposure time	:	2 years
Dose	:	0, 10, 32, and 100 mg/kg bw/day
Method	:	OECD Test Guideline 452

Species	:	Rat, male and female
LOAEC	:	0,0011 mg/l
Application Route	:	Inhalation
Exposure time	:	6 months
Target Organs	:	Respiratory system

GAMMA-CYHALOTHRIN:

LOAEL	:	6 mg/kg
Method	:	OECD Test Guideline 408
Target Organs	:	Nervous system

Aspiration toxicity

May be fatal if swallowed and enters airways.

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

The substance does not have properties associated with aspiration hazard potential.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:
May be fatal if swallowed and enters airways.

GAMMA-CYHALOTHRIN:
The substance does not have properties associated with aspiration hazard potential.

Experience with human exposure

Components:

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Skin contact : Symptoms: Repeated exposure may cause skin dryness or cracking.

Further information

Product:

Remarks : Solvents may degrease the skin.

Components:

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Remarks : Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

GAMMA-CYHALOTHRIN:

Remarks : On contact, the active ingredient can cause feelings of burning, tingling or numbness in exposed areas (paraesthesia), which is harmless at low exposure, but can be quite painful, especially in the eye. The effect may result from splash, aerosol or transfer from contaminated gloves. The effect is transient, lasting up to 24 hours, but may in exceptional cases last longer. It may be considered as a warning that overexposure has occurred and that work practice should be reviewed.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 1,99 µg/l
Exposure time: 48 h

Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): 129 mg/kg Exposure time: 14 d
Toxicity to terrestrial organisms	:	LD50 (Coturnix japonica (Japanese quail)): 215 mg/kg
		LC50 (Apis mellifera (bees)): 0.19 Exposure time: 48 h

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0,18 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0,72 µg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	IC50 (Selenastrum capricornutum (green algae)): 4,06 mg/l Exposure time: 72 h
M-Factor (Acute aquatic toxicity)	:	1.000
Toxicity to fish (Chronic toxicity)	:	NOEC (Oncorhynchus mykiss (rainbow trout)): 0,021 mg/l Exposure time: 37 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0,00006 mg/l Exposure time: 21 d
M-Factor (Chronic aquatic toxicity)	:	1.000
Toxicity to soil dwelling organisms	:	(Eisenia fetida (earthworms)): 613 mg/kg Exposure time: 14 d
		Remarks: No significant adverse effect on Nitrogen mineralization. No significant adverse effect on Carbon mineralization.
Toxicity to terrestrial organisms	:	LD50 (Colinus virginianus (Bobwhite quail)): 359 mg/kg Exposure time: 5 d
		LC50 (Colinus virginianus (Bobwhite quail)): 3.497 mg/kg Exposure time: 5 d Remarks: Dietary
		LD50 (Anas platyrhynchos (Mallard duck)): > 2.250 mg/kg
		LD50 (Apis mellifera (bees)): 0.38 µg/bee End point: Acute oral toxicity

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Toxicity to fish	:	LL50 (Oncorhynchus mykiss (rainbow trout)): 2 - 5 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EL50 (Daphnia magna (Water flea)): 1,4 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EL50 (Pseudokirchneriella subcapitata (green algae)): 1 - 3 mg/l Exposure time: 24 h Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EL50 (Daphnia magna (Water flea)): 0,89 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
Toxicity to microorganisms	:	LL50 (Tetrahymena pyriformis): 677,9 mg/l Exposure time: 72 h Test Type: Growth inhibition

Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, mono-C8-10-alkyl ethers, phosphates:

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 8,8 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	NOEC (Desmodesmus subspicatus (green algae)): 6,25 mg/l Exposure time: 72 h Test Type: semi-static test ErC50 (Desmodesmus subspicatus (green algae)): 63 - 78 mg/l Exposure time: 72 h Test Type: semi-static test

maleic anhydride:

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 42,81 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	:	EC10 (Pseudokirchneriella subcapitata (green algae)): 11,8 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials EC50 (Pseudokirchneriella subcapitata (green algae)): 74,35 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials
Toxicity to daphnia and other	:	NOEC (Daphnia magna (Water flea)): 10 mg/l

aquatic invertebrates (Chronic toxicity)		Exposure time: 21 d
Toxicity to microorganisms	:	EC10 (Pseudomonas putida): 44,6 mg/l Exposure time: 18 h Method: DIN 38 412 Part 8

GAMMA-CYHALOTHRIN:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0,07 µg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 0,1 µg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (algae): > 2,85 mg/l Exposure time: 72 h NOEC (algae): 0,134 mg/l Exposure time: 72 h IC50 (Selenastrum capricornutum (green algae)): > 2,85 mg/l Exposure time: 72 h
M-Factor (Acute aquatic toxicity)	:	10.000
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 0,035 µg/l Exposure time: 21 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0,0022 µg/l Exposure time: 21 d
M-Factor (Chronic aquatic toxicity)	:	10.000
Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): > 1300 mg/kg dry weight (d.w.) Exposure time: 14 d NOEC (Eisenia fetida (earthworms)): 0,25 mg/kg, > 1300 mg/kg dry weight (d.w.) Exposure time: 56 d End point: reproduction
Toxicity to terrestrial organisms	:	LD50 (Colinus virginianus (Bobwhite quail)): > 2.000 mg/kg LD50 (Apis mellifera (bees)): 0.005 µg/bee Exposure time: 24 h End point: Acute contact toxicity LD50 (Apis mellifera (bees)): 4.2 µg/bee Exposure time: 24 h

End point: Acute oral toxicity

Persistence and degradability

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Biodegradability : Result: Not readily biodegradable.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 58,6 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: Based on data from similar materials

Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, mono-C8-10-alkyl ethers, phosphates:

Biodegradability : Result: Biodegradable
Biodegradation: 87 %
Exposure time: 28 d
Method: Regulation (EC) No. 440/2008, Annex, C.4-B

maleic anhydride:

Biodegradability : Inoculum: activated sludge, non-adapted
Result: Readily biodegradable.
Biodegradation: > 90 %
Exposure time: 25 d
Method: OECD Test Guideline 301B
Remarks: Based on data from similar materials

GAMMA-CYHALOTHRIN:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 21 %
Exposure time: 28 d

Bioaccumulative potential

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 95
Remarks: Bioaccumulation is unlikely.
See section 9 for octanol-water partition coefficient.

Partition coefficient: n-octanol/water : log Pow: 2,75

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Bioaccumulation : Remarks: The product/substance has a potential to bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 3,72
Method: QSAR

maleic anhydride:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: -2,61

GAMMA-CYHALOTHRIN:

Bioaccumulation : Remarks: Can accumulate in aquatic organisms.

Partition coefficient: n-octanol/water : log Pow: 5,65

Mobility in soil

Components:

malathion (ISO) [containing ≤ 0,03 % isomalathion]:

Distribution among environmental compartments : Remarks: medium mobility in soil

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Distribution among environmental compartments : Remarks: Expected to partition to sediment and wastewater solids. Moderately volatile.

GAMMA-CYHALOTHRIN:

Distribution among environmental compartments : Koc: 59677 ml/g, log Koc: 4,77
Kd: 239 - 826 ml/g
Remarks: Slightly mobile in soils

Other adverse effects

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

Hygienic standards:

(Allowable concentration in air, water, including fishery waters, soil)

Components	Air	Water	Soil	Data Source
malathion (ISO) [containing ≤ 0,03 % isomalathion] 121-75-5	Concentration that prevents irritation, reflex reactions, odors when exposed to 20-30 minutes -	Maximum Permissible Concentration 0,00001 Milligrams per cubed decimeter		List 5

	maximum one-time: 0,015 mg/m3 Limiting health hazard indicator: reflectory Class 2 - highly dangerous	Limiting health hazard indicator: toxic Hazard class: 1		
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified 64742-94-5	TSEL value: 0,2 mg/m3	Maximum Permissible Concentration 0,05 Milligrams per cubed decimeter Limiting health hazard indicator: toxic Hazard class: 3		List 5
maleic anhydride 108-31-6	Concentration that provides admissible (acceptable) levels of risk when exposed to at least 24 hours - average daily: 0,05 mg/m3 Limiting health hazard indicator: Reflectory-resorptive Class 2 - highly dangerous Concentration that prevents irritation, reflex reactions, odors when exposed to 20-30 minutes - maximum one-time: 0,2 mg/m3 Limiting health hazard indicator: Reflectory-resorptive Class 2 - highly dangerous	Maximum Permissible Concentration 0,01 Milligrams per cubed decimeter Limiting health hazard indicator: toxic Hazard class: 4		List 5

List 5: Order of the Russian Federal Fisheries Agency "Standards of maximum permissible concentrations of harmful substances in fishery water bodies"

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.

Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Do not re-use empty containers.
Packaging that is not properly emptied must be disposed of as the unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

ADR

UN number	:	UN 2902
Proper shipping name	:	PESTICIDE, LIQUID, TOXIC, N.O.S. (Malathion, Gamma-cyhalothrin, ALKYL(C3-C6)BENZENES)
Class	:	6.1
Packing group	:	III
Labels	:	6.1
Hazard Identification Number	:	60
Tunnel restriction code	:	(E)
Environmentally hazardous	:	yes

IATA-DGR

UN/ID No.	:	UN 2902
Proper shipping name	:	Pesticide, liquid, toxic, n.o.s. (Malathion, Gamma-cyhalothrin, ALKYL(C3-C6)BENZENES)
Class	:	6.1
Packing group	:	III
Labels	:	Toxic
Packing instruction (cargo aircraft)	:	663
Packing instruction (passenger aircraft)	:	655
Environmentally hazardous	:	yes

IMDG-Code

UN number	:	UN 2902
Proper shipping name	:	PESTICIDE, LIQUID, TOXIC, N.O.S. (Malathion, Gamma-cyhalothrin, ALKYL(C3-C6)BENZENES)
Class	:	6.1
Packing group	:	III
Labels	:	6.1
EmS Code	:	F-A, S-A
Marine pollutant	:	yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

15. REGULATORY INFORMATION

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

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

TCSI	:	On the inventory, or in compliance with the inventory
TSCA	:	Product contains substance(s) not listed on TSCA inventory.
AIIC	:	Not in compliance with the inventory
DSL	:	This product contains the following components that are not on the Canadian DSL nor NDSL. (S)-α-CYANO-3-PHENOXYBENZYL (1R,3R)-3-[(Z)-2-CHLORO-3,3,3-TRIFLUOROPROP-1-ENYL]-2,2-DIMETHYLCYCLOPROPANECARBOXYLATE
ENCS	:	Not in compliance with the inventory
ISHL	:	Not in compliance with the inventory
KECI	:	Not in compliance with the inventory
PICCS	:	Not in compliance with the inventory
IECSC	:	Not in compliance with the inventory
NZIoC	:	Not in compliance with the inventory
TECI	:	Not in compliance with the inventory

16. OTHER INFORMATION

Full text of H-Statements

H301	Toxic if swallowed.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H313	May be harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H333	May be harmful if inhaled.
H372	Causes damage to organs through prolonged or repeated exposure.
H372	Causes damage to organs through prolonged or repeated exposure if inhaled.
H400	Very toxic to aquatic life.
H401	Toxic to aquatic life.

H402	Harmful to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Asp. Tox.	:	Aspiration hazard
Eye Dam.	:	Serious eye damage
Skin Corr.	:	Skin corrosion
Skin Sens.	:	Skin sensitization
STOT RE	:	Specific target organ toxicity - repeated exposure
RU OEL	:	SanPiN 1.2.3685-21 Table 2.1 Maximum permissible concentrations (MPC) of pollutants in the air of the working area
RU OEL / MPC-STEL	:	Maximum Permissible Concentration - Short Term Exposure

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; 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; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; 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 Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; 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; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization 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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

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