MALATHION 526 g/L EC (50% w/w)

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11.10.2024	50000613	Date of first issue: 11.10.2024

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

1.1 Product identifier

Product name MALATHION 526 g/L EC (50% w/w)

Other means of identification

Product code 50000613

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

Use of the Substance/Mixture : Insecticide

Recommended restrictions on use : Use as recommended by the label.

1.3 Manufacturer or supplier's details

Supplier Address

FMC Agricultural Solutions A/S
Thyborønvej 78
DK-7673 Harboøre
Denmark

Telephone: +45 9690 9690
Telefax: +45 9690 9691
E-mail address: SDS-Info@fmc.com .

1.4 Emergency telephone number

For leak, fire, spill or accident emergencies, call:
Denmark: +45-69918573 (CHEMTREC)

Medical emergency:
Denmark: +45 82 12 12 12

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.

Specific target organ toxicity - single exposure, Category 3, Central nervous system	H336: May cause drowsiness or dizziness.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements :
H304 May be fatal if swallowed and enters airways.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H336 May cause drowsiness or dizziness.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P261 Avoid breathing mist or vapours or spray.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

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.

Disposal:

P501 Dispose of contents and/or container in accordance with hazardous waste regulations.

Hazardous components which must be listed on the label:

malathion (ISO) [containing ≤ 0,03 % isomalathion]
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified
acetic anhydride
calcium bis(dodecylbenzenesulphonate), branched

Additional Labelling

EUH066 Repeated exposure may cause skin dryness or cracking.
EUH401 To avoid risks to human health and the environment, comply with the instructions for use.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
malathion (ISO) [containing ≤ 0,03 % isomalathion]	121-75-5 204-497-7 015-041-00-X	Acute Tox. 4; H302 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1.000 M-Factor (Chronic aquatic toxicity): 1.000 Acute toxicity estimate Acute oral toxicity: 1.608 mg/kg	50
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5 265-198-5 649-424-00-3	Asp. Tox. 1; H304 STOT SE 3; H336 Aquatic Chronic 2: H411	>= 30 - < 50

acetic anhydride	108-24-7 203-564-8 607-008-00-9	Flam. Liq. 3; H226 Acute Tox. 4; H302 Acute Tox. 4; H332 Skin Corr. 1B; H314 Eye Dam. 1; H318 --- specific concentration limit Skin Corr. 1B; H314 >= 25 % Skin Irrit. 2; H315 5 - < 25 % Eye Dam. 1; H318 5 - < 25 % Eye Irrit. 2; H319 1 - < 5 % STOT SE 3; H335 >= 5 % --- Acute toxicity estimate Acute oral toxicity: 630 mg/kg	>= 1 - < 3
calcium bis(dodecylbenzenesulphonate), branched	70528-83-5 274-654-2	Flam. Liq. 3; H226 Skin Irrit. 2; H315 Eye Dam. 1; H318 --- Acute toxicity estimate Acute oral toxicity: 3.333 mg/kg Acute dermal toxicity: 1.470 mg/kg	>= 1 - < 3

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of 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.

Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
Avoid inhalation, ingestion and contact with skin and eyes.

If potential for exposure exists refer to Section 8 for specific personal protective equipment.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.
If unconscious, place in recovery position and seek medical advice.
If experiencing any discomfort, immediately remove from exposure. Light cases: Keep person under surveillance. Get medical attention immediately if symptoms develop. Serious cases: Get medical attention immediately or call for an ambulance.

In case of skin contact : Take off all contaminated clothing immediately.
Wash contaminated clothing before re-use.
Wash off immediately with plenty of water for at least 15 minutes.
Get medical attention immediately if irritation develops and persists.

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.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Exposure may result in nausea, vomiting, tremors, cramps, weakness, shortness of breath, a slowed heart rate, headache, abdominal pain, and diarrhea.

On contact, the first symptoms to appear may be irritation.
Symptoms of cholinesterase inhibition: nausea, headache, vomiting, cramps, weakness, blurred vision, pin-point pupils, tightness in chest, laboured breathing, nervousness, sweating, watering of eyes, drooling or frothing of mouth and nose, muscle spasms and coma.

On exposure to larger quantities of aged product, symptoms of poisoning (cholinesterase inhibition) may occur.

Malathion is a cholinesterase inhibitor affecting the central and peripheral nervous systems producing respiratory depression.

Risks : May be fatal if swallowed and enters airways.
Causes serious eye irritation.
May cause drowsiness or dizziness.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : In an industrial setting, the antidote atropine sulphate should be available at the workplace.
Decontamination procedures such as whole body washing, gastric lavage and administration of activated charcoal are often required.
Obidoxime chloride (Toxogonin), alternatively pralidoxime chloride(2-PAM), may be administered as an adjunct to, but not a substitute for atropine sulphate. Treatment with oxime should be maintained as long as atropine sulphate is administered.
Much information on (acetyl)cholinesterase inhibition and its treatment can be found on the internet.
This product contains a reversible cholinesterase inhibitor. Atropine sulfate is antidotal. Support respiration as needed with removal of secretions, maintenance of a patent airway and, if necessary, artificial ventilation. If cyanosis is absent: Adults - start treatment by giving 2 mg atropine intravenously or intramuscularly, if necessary, and repeat with 0.4 - 2.0 mg atropine at 15 minute intervals until atropinization occurs (tachycardia, flushed skin, dry mouth, mydriasis); Children under 12 - initial dose = 0.05 mg/kg body weight and repeat dose = 0.02 - 0.05 mg/kg body weight. Start 2-PAM at the same time, following manufacturer's recommended dosages and administration. Morphine, reserpine,phenothiazines and theophylline are probably contraindicated.
At first sign of pulmonary edema, the patient should be given supplemental oxygen and treated symptomatically. Observe patient to ensure that these symptoms do not recur as atropinization wears off.If in eyes,instill one drop of homatropine.
Antidote: If symptoms if cholinesterase inhibition (see section 11) are present, administer atropine sulphate, which often is a lifesaving antidote, in large doses, TWO to FOUR mg intravenously or intramuscularly as soon as possible. Repeat at 5 to 10 minute intervals until signs of atropinisation appear and maintain full atropinisation until all organophosphate is metabolised.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Dry chemical, CO2, water spray or regular foam.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media	:	High volume water jet Do not spread spilled material with high-pressure water streams.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	Oxides of phosphorus Carbon oxides Sulphur oxides Fire may produce irritating, corrosive and/or toxic gases.

5.3 Advice for firefighters

Special protective equipment for firefighters	:	Firefighters should wear protective clothing and self-contained breathing apparatus.
Further information	:	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. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation. Never return spills in original containers for re-use. Mark the contaminated area with signs and prevent access to unauthorized personnel. Only qualified personnel equipped with suitable protective equipment may intervene. For disposal considerations see section 13.

6.2 Environmental precautions

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.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapours/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 sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Advice on protection against fire and explosion	:	Do not spray on a naked flame or any incandescent material. Keep away from open flames, hot surfaces and sources of ignition.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	No smoking. 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 stability	:	No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s)	:	Registered pesticide to be used in accordance with a label approved by country-specific regulatory authorities.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
malathion (ISO) [containing ≤ 0,03 % isomalathion]	121-75-5	GV	5 mg/m3	DK OEL
	Further information: Means that the substance can be absorbed through the skin.			
		S	10 mg/m3	DK OEL
	Further information: Means that the substance can be absorbed through the skin.			
acetic anhydride	108-24-7	L	2 ppm 20 mg/m3	DK OEL
	Further information: Guiding list of organic solvents.			

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
acetic anhydride	Workers	Inhalation	Long-term systemic effects	4,2 mg/m3
	Workers	Inhalation	Long-term local effects	4,2 mg/m3
	Workers	Inhalation	Acute local effects	12,6 mg/m3

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
malathion (ISO) [containing ≤ 0,03 % isomalathion]	Fresh water	1,2
acetic anhydride	Fresh water	3,058 mg/l
	Marine water	0,3058 mg/l
	Sewage treatment plant	115 mg/l
	Fresh water sediment	11,36 mg/kg dry weight (d.w.)
	Marine sediment	1,136 mg/kg dry weight (d.w.)
	Soil	0,470 mg/kg dry weight (d.w.)
	Intermittent use (freshwater)	30,58 mg/l

8.2 Exposure controls

Personal protective equipment

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

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.
Skin and body protection	:	Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Respiratory protection	:	No personal respiratory protective equipment normally required.
Protective measures	:	In the context of professional plant protection use as recommended, the end user must refer to the label and the instructions for use. Ensure that eye flushing systems and safety showers are located close to the working place. 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.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Colour	:	yellowish-brown
Odour	:	aromatic
Odour Threshold	:	No data available
Melting point/freezing point	:	< 0 °C
Initial boiling point and boiling range	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	71 °C Method: Pensky-Martens closed cup
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
pH	:	acidic
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Solubility(ies)		
Water solubility	:	Miscible
Solubility in other solvents	:	250 g/l(20 °C) Solvent: ethyl acetate Active ingredient

57 - 67 g/l(20 °C)
Solvent: Heptane
Active ingredient
148,2 mg/l(25 °C)
Solvent: water
Active ingredient

Partition coefficient: n-octanol/water	:	No data available
Vapour pressure	:	No data available
Relative density	:	No data available
Density	:	1.052 g/l
Bulk density	:	No data available
Relative vapour density	:	No data available
Particle characteristics		
Particle size	:	No data available
Particle Size Distribution	:	No data available
Shape	:	No data available

9.2 Other information

Explosives	:	Not explosive
Oxidizing properties	:	Non-oxidizing

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 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.
Malathion will decompose rapidly when heated to temperatures above 100°C, significantly increasing the risk of explosion. Direct local heating such as electric heating or by steam must be avoided.

10.3 Possibility of hazardous reactions

Hazardous reactions : No decomposition if stored and applied as directed.

Vapours may form explosive mixture with air.An acid-base neutralisation reaction can be hazardous because of heat release.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.
Avoid formation of aerosol.
Avoid extreme temperatures
Heating of the mixture may evolve harmful and irritant vapours.

10.5 Incompatible materials

Materials to avoid : 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).

10.6 Hazardous decomposition products

See subsection 5.2.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

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

Product:

Acute oral toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 425
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat): > 4,9 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 4.000 mg/kg
Method: OECD Test Guideline 402
Remarks: Based on data from similar materials

Components:

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

Acute oral toxicity : LD50 (Rat): 1.857 mg/kg
Method: OECD Test Guideline 401

LD50 (Rat, female): 1.608 - 2.550 mg/kg
Method: OECD Test Guideline 401
Symptoms: Tremors, hypoactivity
GLP: yes

Acute inhalation toxicity : LC50 (Rat): > 5,2 mg/l
Exposure time: 4 h

Test atmosphere: dust/mist
Method: EPA OPP 81 - 3
GLP: yes
Remarks: no mortality

Acute dermal toxicity : LD50 (Rat): > 2.000 mg/kg
Method: US EPA Test Guideline OPP 81-2
GLP: yes
Assessment: The component/mixture is minimally toxic after single contact with skin.

LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 402
GLP: yes
Assessment: The component/mixture is minimally toxic after single contact with skin.

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: vapour
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

acetic anhydride:

Acute oral toxicity : LD50 (Rat, male and female): 630 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): 1,670 mg/l
Exposure time: 6 h
Test atmosphere: vapour

calcium bis(dodecylbenzenesulphonate), branched:

Acute oral toxicity : Acute toxicity estimate: 3.333 mg/kg

Acute dermal toxicity : Acute toxicity estimate: 1.470 mg/kg

Skin corrosion/irritation

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

Product:

Assessment : Not classified as irritant

Method : OECD Test Guideline 404
Result : Mild skin irritation
Remarks : Based on data from similar materials

Components:

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

Species : Rabbit
Method : US EPA Test Guideline OPP 81-5
Result : No skin irritation
GLP : yes

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

acetic anhydride:

Result : Corrosive after 3 minutes to 1 hour of exposure

calcium bis(dodecylbenzenesulphonate), branched:

Result : Skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Product:

Assessment : Risk of serious damage to eyes.
Method : OECD Test Guideline 405
Result : Eye irritation
Remarks : Based on data from similar materials

Components:

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

Species : Rabbit
Method : EPA OPP 81-4
Result : No eye irritation
GLP : yes

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

acetic anhydride:

Species : Rat
Result : slight irritation

calcium bis(dodecylbenzenesulphonate), branched:

Result : Irreversible effects on the eye

Respiratory or skin sensitisation

Skin sensitisation

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

Respiratory sensitisation

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

Product:

Assessment : The product is a skin sensitiser, sub-category 1B.
Method : OECD Test Guideline 429
Result : May cause sensitisation by skin contact.
Remarks : Based on data from a similar product.

Remarks : Causes sensitisation.

Components:

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

Exposure routes : Dermal
Species : Guinea pig
Method : US EPA Test Guideline OPP 81-6
Result : Does not cause skin sensitisation.
GLP : yes

Test Type : Local lymph node assay (LLNA)
Exposure routes : Dermal
Species : mice
Method : OECD Test Guideline 429
Result : Does not cause skin sensitisation.
GLP : yes

Test Type : Maximisation Test
Exposure routes : Dermal
Species : Guinea pig
Method : OECD Test Guideline 406
Result : May cause sensitisation by skin contact.

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

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

Germ cell mutagenicity

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

Product:

Germ cell mutagenicity- Assessment	:	Weight of evidence does not support classification as a germ cell mutagen.

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 (vapour) Result: negative

acetic anhydride:

Genotoxicity in vitro	:	Test Type: reverse mutation assay Result: negative

Test Type: Chromosome aberration test in vitro
Result: negative
Remarks: Based on data from similar materials

Test Type: In vitro mammalian cell gene mutation test
Result: Conflicting results have been seen in different studies.

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Rat (male and female)
Application Route: inhalation (vapour)
Result: negative

Carcinogenicity

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

Product:

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

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 (vapour)
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.

Reproductive toxicity

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

Product:

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

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 foetal development : Test Type: Embryo-foetal 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-foetal development
Species: Rabbit
General Toxicity Maternal: NOAEL: 25 mg/kg bw/day
Teratogenicity: NOAEL: 25 mg/kg bw/day
Result: No teratogenic effects

acetic anhydride:

Effects on foetal development : Test Type: reproductive and developmental toxicity study
Species: Rabbit
Application Route: Oral
Dose: 2.5,16,74.3,345,1600mg/kgbw/d
Duration of Single Treatment: 13 d
General Toxicity Maternal: LOAEL: 74,3 mg/kg bw/day
Embryo-foetal toxicity: NOAEL: 1.600 mg/kg bw/day
Symptoms: Malformations were observed.
Result: negative
Remarks: Based on data from similar materials

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

STOT - single exposure

May cause drowsiness or dizziness.

Product:

Assessment : May cause drowsiness or dizziness.

Components:

acetic anhydride:

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

STOT - repeated exposure

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

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 (vapour)
Exposure time	:	12 Months

acetic anhydride:

Species	:	Rat, male and female
LOAEC	:	25 ppm
Application Route	:	Inhalation
Test atmosphere	:	vapour
Exposure time	:	2 weeks
Dose	:	25, 100, 400 ppm

Aspiration toxicity

May be fatal if swallowed and enters airways.

Product:

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

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.

acetic anhydride:

The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Experience with human exposure

Components:

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

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

Neurological effects

Components:

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

Remarks : Neurotoxity observed in animals studies

Further information

Product:

Remarks : Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
Concentrations substantially above the TLV value may cause narcotic effects.
Solvents may degrease the skin.

Components:

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

Remarks : The active ingredient malathion is a cholinesterase inhibitor of low mammalian toxicity. However, prolonged storage or storage at too high temperatures may induce formation of the much more toxic and synergistic contaminant isomalathion (LD50, oral, rat, 89 mg/kg). Both malathion and isomalathion rapidly enter the body on contact with all skin surfaces and eyes.
Repeated exposures to cholinesterase inhibitors such as malathion or isomalathion may, without warning, cause increased susceptibility to doses of any cholinesterase inhibitor.

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.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Ecotoxicology Assessment

Acute aquatic toxicity	:	Very toxic to aquatic life.
Chronic aquatic toxicity	:	Very toxic to aquatic life with long lasting effects.

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: 0,021 mg/l Exposure time: 37 d Species: Oncorhynchus mykiss (rainbow trout)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0,00006 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea)
M-Factor (Chronic aquatic toxicity)	:	1.000
Toxicity to soil dwelling organisms	:	613 mg/kg Exposure time: 14 d Species: Eisenia fetida (earthworms)

Remarks: No significant adverse effect on nitrogen mineralization.
No significant adverse effect on carbon mineralization.

Toxicity to terrestrial organisms : LD50: 359 mg/kg
Exposure time: 5 d
Species: Colinus virginianus (Bobwhite quail)

LC50: 3.497 mg/kg
Exposure time: 5 d
Species: Colinus virginianus (Bobwhite quail)
Remarks: Dietary

LD50: > 2.250 mg/kg
Species: Anas platyrhynchos (Mallard duck)

LD50: 0.38 µg/bee
End point: Acute oral toxicity
Species: Apis mellifera (bees)

Ecotoxicology Assessment

Toxicity Data on Soil : Harmful to the soil environment.

Other organisms relevant to the environment : Harmful to terrestrial vertebrates., Harmful to terrestrial invertebrates.

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 microorganisms : LL50 (Tetrahymena pyriformis): 677,9 mg/l
Exposure time: 72 h
Test Type: Growth inhibition

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EL50: 0,89 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

acetic anhydride:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 300,82 mg/l

Exposure time: 96 h
Test Type: semi-static test
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 300,82 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : EC50 (Skeletonema costatum (marine diatom)): > 300,82 mg/l
Exposure time: 72 h
Test Type: static test
Remarks: Based on data from similar materials

EC50 (Skeletonema costatum (marine diatom)): 300,82 mg/l
Exposure time: 72 h
Test Type: static test
Remarks: Based on data from similar materials

Toxicity to microorganisms : NOEC (Pseudomonas putida): 1.150 mg/l
Exposure time: 16 h
Test Type: Growth inhibition

calcium bis(dodecylbenzenesulphonate), branched:

Toxicity to fish : LC50 (Fish): > 1 - 10 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1 - 10 mg/l
Exposure time: 48 h
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : EC50 (algae): > 1 - 10 mg/l
Exposure time: 72 h
Remarks: Based on data from similar materials

12.2 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

acetic anhydride:

Biodegradability : Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: 96 %
Exposure time: 20 d
Remarks: Based on data from similar materials

calcium bis(dodecylbenzenesulphonate), branched:

Biodegradability : Result: Readily biodegradable.

12.3 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

acetic anhydride:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 3,16
Method: QSAR

Partition coefficient: n-octanol/water : log Pow: -0,577 (25 °C)
pH: 7
Method: QSAR

calcium bis(dodecylbenzenesulphonate), branched:

Bioaccumulation : Bioconcentration factor (BCF): 1
Remarks: Bioaccumulation is unlikely.

12.4 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.

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 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.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	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. Waste, residues, etc. must be collected, stored and disposed of in tightly closed container labeled: "Contains a substance that is covered by the Danish health and safety regulation in terms of cancer risk."
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

14.1 UN number or ID number

ADN	:	UN 3082
ADR	:	UN 3082
RID	:	UN 3082
IMDG	:	UN 3082
IATA	:	UN 3082

14.2 UN proper shipping name

ADN	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Malathion)
ADR	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Malathion)
RID	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Malathion)
IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Malathion)
IATA	:	Environmentally hazardous substance, liquid, n.o.s. (Malathion)

14.3 Transport hazard class(es)

		Class	Subsidiary risks
ADN	:	9	
ADR	:	9	
RID	:	9	
IMDG	:	9	
IATA	:	9	

14.4 Packing group

ADN

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9

ADR

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90

Labels	:	9
Tunnel restriction code	:	(-)

RID

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9

IMDG

Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F

IATA (Cargo)

Packing instruction (cargo aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

14.5 Environmental hazards

ADN

Environmentally hazardous	:	yes

ADR

Environmentally hazardous	:	yes

RID

Environmentally hazardous	:	yes

IMDG

Marine pollutant	:	yes

IATA (Passenger)

Environmentally hazardous	:	yes

IATA (Cargo)

Environmentally hazardous	:	yes

14.6 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.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Conditions of restriction for the following entries should be considered: Number on list 75, 3 If you intend to use this product as tattoo ink, please contact your vendor.
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	:	Not applicable
Regulation (EC) on substances that deplete the ozone layer	:	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast)	:	naphthalene
Regulation (EU) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals	:	malathion (ISO) [containing ≤ 0,03 % isomalathion]
REACH - List of substances subject to authorisation (Annex XIV)	:	Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	E1	ENVIRONMENTAL HAZARDS
	34	Petroleum products: (a) gasolines and naphthas, (b) kerosenes (including jet fuels), (c) gas oils (including diesel fuels, home heating oils and gas oil blending streams),(d) heavy fuel oils (e) alternative fuels serving the same purposes and with similar properties as regards flammability and environmental hazards as the products referred to in points (a) to (d)

Other regulations:

When evaluating a workplace, measures must be taken to ensure that employees are not ex-

posed to conditions that may pose a risk during pregnancy or breastfeeding (cf. The Danish Working Environment Authority's Executive Order on The Performance of Work)

Young people under the age of 18 are not allowed to use or be exposed to the product professionally. Young people above the age of 15 are, however, except from this rule if the product is a necessary part of their education.

The substance/mixture is subject to the provisions of BEK no 822 of 16/06/2023 (as amended) “Executive order on Measures to Protect Workers from the Risks related to Exposure to Carcinogenic Substances and Materials at Work”. The work with this substance/mixture may pose a cancer risk.	:	Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified

The components 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
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	:	Not in compliance with the inventory

15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this mixture.

SECTION 16: Other information

Full text of H-Statements

H226	:	Flammable liquid and vapour.
H302	:	Harmful if swallowed.
H304	:	May be fatal if swallowed and enters airways.
H314	:	Causes severe skin burns and eye damage.
H315	:	Causes skin irritation.
H317	:	May cause an allergic skin reaction.
H318	:	Causes serious eye damage.
H332	:	Harmful if inhaled.

H400	:	Very toxic to aquatic life.
H410	:	Very toxic to aquatic life with long lasting effects.
EUH066	:	Repeated exposure may cause skin dryness or cracking.

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
Flam. Liq.	:	Flammable liquids
Skin Corr.	:	Skin corrosion
Skin Irrit.	:	Skin irritation
Skin Sens.	:	Skin sensitisation
DK OEL	:	Denmark. Occupational Exposure Limits
DK OEL / S	:	Exposure period of 15 minutes
DK OEL / GV	:	Long term exposure limit
DK OEL / L	:	Ceiling

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

Further information

MALATHION 526 g/L EC (50% w/w)

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	11.10.2024	50000613	Date of first issue: 11.10.2024

Classification of the mixture:		**Classification procedure:**
Eye Dam. 1	H318	Based on product data or assessment
Skin Sens. 1	H317	Based on product data or assessment
STOT SE 3	H336	Based on product data or assessment
Asp. Tox. 1	H304	Based on product data or assessment
Aquatic Acute 1	H400	Based on product data or assessment
Aquatic Chronic 1	H410	Based on product data or assessment

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Prepared by

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