Carial® Flex

syngenta®

GROUP 40 27 FUNGICIDES F

Product registration number: MAPP 16629
UFI: CXA6-E025-G003-HCMM

A water dispersible granule containing 250 g/kg mandipropamid and 180 g/kg cymoxanil.

For the control of Foliar blight (*Phytophthora infestans*) in potatoes.

The (COSHH) Control of Substances Hazardous to Health Regulations may apply to the use of this product at work.

Syngenta UK Limited
CPC 4, Capital Park, Fulbourn, Cambridge CB21 5XE
Tel: Cambridge (01223) 883400

In case of toxic or transport emergency ring 0044 (0) 1484 538444 any time

PROTECT FROM FROST. SHAKE WELL BEFORE USE

SAFETY PRECAUTIONS

(a) Operator protection

Engineering control of operator must be used where reasonably practicable in addition to the following personal protective equipment:
WEAR SUITABLE PROTECTIVE GLOVES when handling the product or handling contaminated surfaces.

However engineering controls may replace personal protective equipment if COSHH assessment shows that they provide an equal or higher standard of protection.
WASH CONCENTRATE from skin immediately.
WASH HANDS AND EXPOSED SKIN before eating, drinking and after work.
IF YOU FEEL UNWELL, seek medical advice (show label where possible).

(b) Environmental protection

Do not contaminate water with the product or its container. Do not clean application equipment near surface water. Avoid contamination via drains from farmyards and roads.

(c) Storage and disposal

KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.
DO NOT RE-USE CONTAINER for any purpose
RINSE CONTAINER THOROUGHLY by using an integrated pressure rinsing device or manually rinsing three times. Add washings to sprayer at time of filling and dispose of safely.

This product label is compliant with the CPA Voluntary Initiative (VI) guidance.

The Voluntary Initiative

L1110762 GBRI/10B PPE 4194244 1615/2014

KEEP 50x20mm AREA CLEAR FOR BARCODE

L & PPE numbers must be kept close to this unprinted barcode area, with a white background behind them

5 kg

CARIAL® Flex

A water dispersible granule containing 250 g/kg mandipropamid and 180 g/kg cymoxanil.

Warning
Harmful if swallowed.
Suspected of damaging fertility. Suspected of damaging the unborn child.
May cause damage to organs (blood, thymus) through prolonged or repeated exposure.
Very toxic to aquatic life with long lasting effects.

Obtain special instructions before use.
Do not breathe dust.
Wash skin thoroughly after handling.
Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
IF exposed or concerned: Get medical advice/ attention.
Collect spillage.
Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.
Contains cymoxanil (ISO). May produce an allergic reaction.

FRONT COVER
PRINT AREA 109 X 118 MM

MAPP 16629 **UFI:** CXA6-E025-G003-HCMM

IMPORTANT INFORMATION

FOR USE ONLY AS A FUNGICIDE

Crops/situations:	Maximum individual dose: (kg product / ha)	Maximum total dose:	Maximum number of treatments: (per crop)	Latest time of application:
Potato	0.6	-	6	7 days before harvest

Other specific restriction:
Application may only be made between 1 May and 31 August.

READ THE LABEL BEFORE USE. USING THIS PRODUCT IN A MANNER THAT IS INCONSISTENT WITH THE LABEL MAY BE AN OFFENCE. FOLLOW THE CODE OF PRACTICE FOR USING PLANT PROTECTION PRODUCTS.

This leaflet is part of the approved Product Label.

THESE PAGES CAN BE ADDED OR REMOVED AS NECESSARY
TO CREATE A 4, 8, 12, 16 OR 20 PAGE BOOKLET
(INCLUDING GLUE PAGE)

DIRECTIONS FOR USE

IMPORTANT: This information is approved as part of the Product Label. All instructions within this section must be carefully read in order to obtain safe and successful use of this product.

CARIAL FLEX can be used on all varieties of potatoes including seed potatoes.

PROPERTIES OF CARIAL FLEX

CARIAL FLEX is a foliar fungicide for the preventative control of late blight (*Phythophthora infestans*) in potatoes and is highly active against spore germination. Uptake into the leaf tissue assures good translaminar and local systemic activity and inhibits mycelial growth during the incubation period whilst also giving some limited curative activity.

DISEASE CONTROLLED

Control of Foliar blight (*Phythophthora infestans*) in potatoes.

BACKGROUND TO POTATO BLIGHT CONTROL

Late blight (*Phythophthora infestans*) is potentially a devastating disease of potatoes. In commercial production, a season long **disease prevention** policy is essential. First of all ensure that other control methods are being satisfactorily applied:

MAXIMUM PRINT AREA
109 X 118 MM

1. Prevent re-growth on potato dumps.
2. Destroy all groundkeepers.
3. Plant disease free seed.
4. Use generous soil ridges to protect tubers.

Integrate this approach with a fungicide programme :

Early Crops

In first and second early potato crops, particularly those grown in the same locality as main crop potatoes, an adequate and full blight protection programme should be applied right up to harvesting or haulm desiccation. This will protect the early crop while helping to reduce disease risk to later crops.

Maincrops

Disease prevention programmes require regular and season long fungicide use to limit foliar blight development. However, as an effective fungicide programme will preserve leaf area there may be more risk of infecting tubers at harvest, particularly during “heavy” blight years. Completion of the control programme should therefore include a complete haulm desiccant. Lifting of the crop should not take place for at least 10 days after **COMPLETE KILL** of the haulm. Crops intended for storage should not be lifted while there is any green tissue **AT ALL** on the leaves or stem bases.

Blight Risk Assessment

The risk of disease is affected by **weather conditions** (during the crop life) and **crop location**:

Weather Conditions - Spread of disease occurs under warm, humid conditions. Preferably use a reliable decision support system to determine what frequency of fungicide treatment is appropriate and fungicide type required.

Note: Blight forecasting has often been based on the occurrence of "Smith periods". A "Smith period" is a 48 hour period in which the minimum temperature is 10°C or more and the relative humidity exceeds 90% for at least 11 hours during the first 24 hours and for at least 11 hours again during the final 24 hours. However, any period of warm, humid weather increases blight risk.

Crop Location - Locations with the highest probability of blight problems are:

1. Areas of the country where extensive main crop or early production takes place e.g. East Anglia, the south west or the west.
2. Areas where climatic conditions that encourage disease development occur on a frequent basis e.g. The south west, the west and the Fens.

TIMING

CARIAL FLEX is a protectant and curative fungicide so following good agricultural practice the programme should start BEFORE blight enters the crop. Commence spraying at the first blight warning or when local weather conditions are favourable for the disease. However applications 1 day after an infection event has occurred have shown to give good levels of control.

Intervals between applications of CARIAL FLEX should be reduced as blight risk increases, so that **protection** of the crop can be maintained.

Applications of CARIAL FLEX should be made at 7-10 day intervals depending on disease pressure. As disease pressure and the risk of late blight infection increase, the interval should be shortened.

Rates of Use

Apply CARIAL FLEX at 0.6 kg product per hectare. Up to six applications may be made per crop. Allow a minimum of 7 days between applications.

Applications of CARIAL FLEX can be made up to 7 days before harvest.

MIXING AND SPRAYING

Spray Volume

Apply CARIAL FLEX in a recommended 200-600 litres of water per hectare

Spray Nozzles

A medium quality spray* is preferred for application of CARIAL FLEX (* as defined by The British Crop Protection Council). A spray pressure of 2 - 3 bar is recommended.

Mixing

Make sure the sprayer is clean and set to give an even application at the correct volume

Fill the spray tank with half the required volume of clean water and start agitation. Add the required amount of CARIAL FLEX and continue agitation whilst adding the rest of the water.

Agitate the mixture thoroughly before use and continue agitation during spraying and any stoppages

Thoroughly wash all spray equipment with water immediately after use

Do not leave the spray liquid in the sprayer for long periods (such as during meal breaks or overnight).

RESISTANCE MANAGEMENT
CARIAL FLEX contains mandipropamid, a CAA fungicide (FRAC code no. 40) and cymoxanil, a cyanoacetamideoxime fungicide (FRAC code no. 27). To minimise the risk of resistance development in the pathogen population the following guidelines for blight fungicides (based on an average number of 12 fungicide applications/season for blight control) should be followed:-

1. Where possible, use an alternating strategy using fungicides from different mode of action groups.
2. Where CAA fungicides are applied as a mixture (co-formulated or as a tank mix) up to six applications (or max. of 50% of the total number of applications) may be made per crop or season.
3. No more than 3 applications of any CAA fungicide should be made consecutively.
4. Further information on suitable tank mix products and resistance management strategies is available from FRAG and BPC websites.

This product is to be used only in accordance with the recommendations and instructions given on the label provided with this pack.

SAFETY PRECAUTIONS
(a) Operator protection
Engineering control of operator must be used where reasonably practicable in addition to the following personal protective equipment:

WEAR SUITABLE PROTECTIVE GLOVES when handling the product or handling contaminated surfaces
However engineering controls may replace personal protective equipment if COSHH assessment shows that they provide an equal or higher standard of protection
WASH CONCENTRATE from skin immediately
WASH HANDS AND EXPOSED SKIN before eating, drinking and after work
IF YOU FEEL UNWELL, seek medical advice (show label where possible)
(b) Environmental protection
Do not contaminate water with the product or its container. Do not clean application equipment near surface water. Avoid contamination via drains from farmyards and roads.
(c) Storage and disposal
KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place
DO NOT RE-USE CONTAINER for any purpose
RINSE CONTAINER THOROUGHLY by using an integrated pressure rinsing device or manually rinsing three times. Add washings to sprayer at time of filling and dispose of safely.

Section 6 of the Health and Safety at Work Act
Additional Product Safety Information

(This section does not form part of the product label under the Plant Protection Products Regulations 1995.)
The product label provides information on a specific pesticidal use of the product; do not use otherwise, unless you have assessed any potential hazard involved, the safety measures required and that the particular use has 'Extension of Use' approval or is otherwise permitted under the Plant Protection Products Regulations.
The information on this label is based on the best available information including data from test results.

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

1.1 Product identifier
Product name: CARIAL FLEX
Design Code: A16520B
Product Registration Number: MAPP 16629
Unique Formula Identifier (UFI) : CXA6-E025-G003-HCMM

1.2 Relevant identified uses of the substance or mixture and uses advised against
Use: Fungicide
Recommended restrictions on use: professional use

1.3 Details of the supplier of the safety data sheet Company
Company: Syngenta UK Ltd, CPC4, Capital Park, Fulbourn, Cambridge, CB21 5XE
Telephone: +44 (0) 1223 883400
Telefax: +44 (0) 1223 882195
E-mail address of person responsible for the SDS: product.technical_enquiries@syngenta.com

1.4 Emergency telephone number
Emergency telephone number: +44 (0) 1484 538444

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Acute toxicity, Category 4 - H302: Harmful if swallowed.
Reproductive toxicity, Category 2 - H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.
Specific target organ toxicity - repeated exposure, Category 2, Blood, thymus - H373: May cause damage to organs through pro-longed or repeated exposure.
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) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Hazard pictograms:

Signal word: Warning

Hazard statements:
H302 Harmful if swallowed.
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
H373 May cause damage to organs (Blood, thymus) through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements:
P201 Obtain special instructions before use.
P260 Do not breathe dust.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P391 Collect spillage.

P501 Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.

Hazardous components which must be listed on the label:
cymoxanil (ISO)
Additional Labelling
EUH208 Contains cymoxanil (ISO). May produce an allergic reaction.
• cymoxanil
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. May form combustible dust concentrations in air.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures
Hazardous components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
mandipropamid (ISO)	374726-62-2 616-213-00-2	Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 1	>= 25 - < 30
cymoxanil (ISO)	57966-95-7 261-043-0 616-035-00-5	Acute Tox. 4; H302 Skin Sens. 1; H317 Repr. 2; H361fd STOT RE 2; H373 (Blood, thymus) Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 1	>= 10 - < 20
citric acid	77-92-9 201-069-1 607-750-00-3	Eye Irrit. 2; H319 STOT SE 3; H335 (Respiratory system)	>= 1 - < 10
Substances with a workplace exposure limit :			
starch	9005-25-8 232-679-6		>= 30 - < 50

For explanation of abbreviations see section 16.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures
General advice: Have the product container, label or Material Safety Data Sheet with you when calling the Syngenta emergency number, a poison control centre or physician, or going for treatment.
Inhalation: Move the victim to fresh air. If breathing is irregular or stopped, administer artificial respiration. Keep patient warm and at rest. Call a physician or poison control centre immediately.
Skin contact: Take off all contaminated clothing immediately. Wash off immediately with plenty of water. If skin irritation persists, call a physician. Wash contaminated clothing before re-use.
Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove

contact lenses. Immediate medical attention is required.
Ingestion: If swallowed, seek medical advice immediately and show this container or label. Do NOT induce vomiting.
4.2 Most important symptoms and effects, both acute and delayed
Symptoms: Nonspecific. No symptoms known or expected.
4.3 Indication of any immediate medical attention and special treatment needed
Medical advice: There is no specific antidote available. Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES
5.1 Extinguishing media
Extinguishing media - small fires: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Extinguishing media - large fires: Use alcohol-resistant foam or water spray.
Unsuitable extinguishing media: Do not use a solid water stream as it may scatter and spread fire.
5.2 Specific hazards arising from the substance or mixture
Specific hazards during fire-fighting: Fire will spread by burning with a visible flame. As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10). Exposure to decomposition products may be a hazard to health.
5.3 Advice for firefighters
Wear full protective clothing and self-contained breathing apparatus. Do not allow run-off from fire fighting to enter drains or water courses. Cool closed containers exposed to fire with water spray.

SECTION 6. ACCIDENTAL RELEASE MEASURES
6.1 Personal precautions, protective equipment and emergency procedures
Refer to protective measures listed in sections 7 and 8. Avoid dust formation.

6.2 Environmental precautions
Environmental precautions: Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.
6.3 Methods and materials for containment and cleaning up
Methods for cleaning up: Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13). Do not create a powder cloud by using a brush or compressed air. Clean contaminated surface thoroughly. Clean with detergents. Avoid solvents. Retain and dispose of contaminated wash water.
6.4 Reference to other sections
For disposal considerations see section 13., Refer to protective measures listed in sections 7 and 8.

SECTION 7. HANDLING AND STORAGE
7.1 Precautions for safe handling
Advice on safe handling: This material is capable of forming flammable dust clouds in air, which, if ignited, can produce a dust cloud explosion. Flames, hot surfaces, mechanical sparks and electrostatic discharges can serve as ignition sources for this material. Electrical equipment should be compatible with the flammability characteristics of this material. The flammability characteristics will be made worse if the material contains traces of flammable solvents or is handled in the presence of flammable solvents. In general personnel handling this material and all conducting equipment should be electrically earthed or grounded. Bulk bags (FIBC) used to contain this material should be Type B, Type C or Type D. Type C bags must be electrically grounded or earthed before powder is charged to or discharged from the bag. If metal or fibre drums are used to contain this material, make certain the metal parts are bonded to the filling equipment and grounded. This material can become readily charged in most operations. Avoid contact with skin and eyes. When using do not eat, drink or smoke. For personal protection see section 8.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers: Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Keep away from food, drink and animal feedingstuffs.

7.3 Specific end use(s)

Specific use(s): For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
starch	9005-25-8	TWA (inhalable dust)	10 mg/m^3	GB EH40
		TWA (Respirable dust)	4 mg/m^3	GB EH40
mandipropamid (ISO)	374726-62-2	TWA	5 mg/m^3	Syngenta

Predicted No Effect Concentration (PNEC):

Substance name	Environmental Compartment	Value
citric acid	Fresh water	0.44 mg/l
	Marine water	0.044 mg/l
	Fresh water sediment	34.6 mg/kg dry weight (d.w.)
	Marine sediment	3.46 mg/kg dry weight (d.w.)
	Sewage treatment plant	1000 mg/l
	Soil	33.1 mg/kg dry weight (d.w.)

8.2 Exposure controls

Engineering measures:

Containment and/or segregation is the most reliable technical protection measure if exposure cannot be eliminated. The extent of these protection measures depends on the actual risks in use. Maintain air concentrations below occupational exposure standards. Where necessary, seek additional occupational hygiene advice.

Personal protective equipment

Eye/face protection: No special protective equipment required.

Hand protection

Material: Nitrile rubber

Break through time: > 480 min

Glove thickness: 0.5 mm

Remarks: Wear protective gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local condi-tions under which the product is used, such as the danger of cuts, abrasion, and the contact time. The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin and body protection: Choose body protection in relation to its type, to the concen-tration and amount of dangerous substances, and to the specific work-place. Remove and wash contaminated clothing before re-use. Wear as appropriate: Dust impervious protective suit

Respiratory protection: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Suitable respiratory equipment: Respirator with a half face mask
The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.
Protective measures: The use of technical measures should always have priority over the use of personal protective equipment. When selecting personal protective equipment, seek appropriate professional advice..

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES
9.1 Information on basic physical and chemical properties
Appearance: granules
Colour: beige to brown
Odour: chalky
Odour Threshold: No data available
pH: 3 - 7, Concentration: 1 %w/v
Melting point/range: No data available
Boiling point/boiling range: No data available
Flash point: No data available
Evaporation rate: No data available
Flammability (solid, gas): May form combustible dust concentrations in air.
Burning number: 5 (100 °C), 5 (20 °C)
Upper explosion limit / Upper flammability limit: No data available
Lower explosion limit / Lower flammability limit: No data available
Vapour pressure: No data available
Relative vapour density: No data available
Density: 1 g/cm^3
Bulk density: 0.4 - 0.6 g/cm^3
Solubility in other solvents: No data available
Partition coefficient: n-octanol/water: No data available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Viscosity, dynamic: No data available
Viscosity, kinematic: No data available
Explosive properties: Not explosive
Oxidizing properties: The substance or mixture is not classified as oxidizing.
9.2 Other information
Minimum ignition temperature: 390 °C
Minimum ignition energy: 3 - 10 mJ
Particle size: No data available

SECTION 10. STABILITY AND REACTIVITY
10.1 Reactivity
None reasonably foreseeable.
10.2 Chemical stability
Stable under normal conditions.
10.3 Possibility of hazardous reactions
Hazardous reactions: No dangerous reaction known under conditions of normal use.
10.4 Conditions to avoid
Conditions to avoid: No decomposition if used as directed.

10.5 Incompatible materials
Materials to avoid: None known.
10.6 Hazardous decomposition products
Hazardous decomposition products: No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION
11.1 Information on toxicological effects
Information on likely routes of exposure: Ingestion, Inhalation, Skin contact, Eye contact
Acute toxicity
Product:
Acute oral toxicity: LD50 (Rat, female): 1,049 mg/kg
Acute inhalation toxicity: LC50 (Rat, male and female): > 5.03 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The component/mixture is minimally toxic after short term inhalation.
Acute dermal toxicity: LD50 (Rat, male and female): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity
Components:
mandipropamid (ISO):
Acute oral toxicity: LD50 (Rat, female): > 5,000 mg/kg
Acute inhalation toxicity: LC50 (Rat, male and female): > 5.19 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity: LD50 (Rat, male and female): > 5,050 mg/kg

cymoxanil (ISO):
Acute oral toxicity: LD50 (Rat): 960 mg/kg
Acute inhalation toxicity: LC50 (Rat): > 5.06 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity: LD50 (Rabbit): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity
Skin corrosion/irritation
Product:
Species: Rabbit
Result: No skin irritation
Components:
mandipropamid (ISO):
Species: Rabbit
Result: No skin irritation
cymoxanil (ISO):
Species: Rabbit
Result: No skin irritation
Serious eye damage/eye irritation
Product:
Species: Rabbit

Result: No eye irritation

Components:

mandipropamid (ISO):

Species: Rabbit

Result: No eye irritation

cymoxanil (ISO):

Species: Rabbit

Result: No eye irritation

citric acid:

Result: Eye irritation

Respiratory or skin sensitisation

Product:

Test Type: Buehler Test

Species: Guinea pig

Result: Did not cause sensitisation on laboratory animals.

Components:

mandipropamid (ISO):

Species: Guinea pig

Result: Did not cause sensitisation on laboratory animals.

cymoxanil (ISO):

Species: Guinea pig

Result: May cause sensitisation by skin contact.

Germ cell mutagenicity

Components:

mandipropamid (ISO):

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

cymoxanil (ISO):

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

Carcinogenicity

Components:

mandipropamid (ISO):

Carcinogenicity - Assessment: No evidence of carcinogenicity in animal studies.

cymoxanil (ISO):

Carcinogenicity - Assessment: No evidence of carcinogenicity in animal studies.

Reproductive toxicity

Components:

mandipropamid (ISO):

Reproductive toxicity - Assessment: No toxicity to reproduction

cymoxanil (ISO):

Reproductive toxicity - Assessment: Some evidence of adverse effects on sexual function and fertility, based on animal experiments., Some evidence of adverse effects on development, based on animal experiments.

STOT - single exposure

Components:

citric acid:

Exposure routes: Inhalation

Target Organs: Respiratory system

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT - repeated exposure

Components:

cymoxanil (ISO):

Target Organs: Blood, thymus

Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Product:

Toxicity to fish: LC50 (*Oncorhynchus mykiss* (rainbow trout)): 32 mg/l
Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates: EC50 (*Daphnia magna* (Water flea)): > 100 mg/l
Exposure time: 48 h
Toxicity to algae/aquatic plants: ErC50 (*Raphidocelis subcapitata* (freshwater green alga)): 61 mg/l
Exposure time: 72 h
EC10 (*Raphidocelis subcapitata* (freshwater green alga)): 16 mg/l
End point: Growth rate
Exposure time: 72 h

Components:

mandipropamid (ISO):

Toxicity to fish: LC50 (*Oncorhynchus mykiss* (rainbow trout)): 4.4 mg/l
Exposure time: 96 h
LC50 (Cyprinus carpio (Carp)): 8.63 mg/l

Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates: EC50 (*Daphnia magna* (Water flea)): 7.1 mg/l
Exposure time: 48 h
EC50 (*Crassostrea virginica* (eastern oyster)): 0.97 mg/l
Exposure time: 96 h
Toxicity to algae/aquatic plants: ErC50 (*Raphidocelis subcapitata* (freshwater green alga)): > 2.5 mg/l
Exposure time: 72 h
NOEC (*Raphidocelis subcapitata* (freshwater green alga)): 1.3 mg/l
End point: Growth rate
Exposure time: 72 h
M-Factor (Acute aquatic toxicity): 1
Toxicity to microorganisms: EC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Toxicity to fish (Chronic toxicity): NOEC: 0.5 mg/l
Exposure time: 32 d
Species: *Pimephales promelas* (fathead minnow)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC: 0.076 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
M-Factor (Chronic aquatic toxicity): 1

cymoxanil (ISO):

Toxicity to fish: LC50 (*Lepomis macrochirus* (Bluegill sunfish)): 29 mg/l
Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates: EC50 (*Daphnia magna* (Water flea)): 27 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants: ErC50 (*Raphidocelis subcapitata* (freshwater green alga)): 0.69 mg/l
Exposure time: 72 h
EC10 (*Raphidocelis subcapitata* (freshwater green alga)): 0.051 mg/l
End point: Growth rate
Exposure time: 72 h
M-Factor (Acute aquatic toxicity): 1
Toxicity to fish (Chronic toxicity): NOEC: 0.044 mg/l
Exposure time: 90 d
Species: *Oncorhynchus mykiss* (rainbow trout)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC: 0.067 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
M-Factor (Chronic aquatic toxicity): 1

12.2 Persistence and degradability

Components:

mandipropamid (ISO):
Biodegradability: Result: Not readily biodegradable.
Stability in water: Degradation half life: 4.5 - 26 d
Remarks: Product is not persistent.

cymoxanil (ISO):
Biodegradability: Result: Not readily biodegradable.
Stability in water: Degradation half life: < 1 d
Remarks: Product is not persistent.

12.3 Bioaccumulative potential

Components:

mandipropamid (ISO):
Bioaccumulation: Remarks: Low bioaccumulation potential.
Partition coefficient: n-octanol/water: log Pow: 3.2 (25 °C)

cymoxanil (ISO):
Bioaccumulation: Remarks: Does not bioaccumulate.
Partition coefficient: n-octanol/water: Pow: 4.66
log Pow: 0.66

12.4 Mobility in soil

Components:

mandipropamid (ISO):
Distribution among environmental compartments: Remarks: Low mobility in soil.
Stability in soil: Dissipation time: 26 - 178 d
Percentage dissipation: 50 % (DT50)
Remarks: Product is not persistent.

cymoxanil (ISO):
Distribution among environmental compartments: Remarks: Moderately mobile in soils
Stability in soil: Dissipation time: 0.9 - 9 d
Percentage dissipation: 50 % (DT50)
Remarks: Product is not persistent.

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.

Components:

mandipropamid (ISO):

Assessment: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

cymoxanil (ISO):

Assessment: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

citric acid:

Assessment: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

Product:

Endocrine disrupting potential: 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 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product: Do not contaminate ponds, waterways or ditches with chemical or used container. Do not dispose of waste into sewer. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations.

Contaminated packaging: Empty remaining contents. Triple rinse containers. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

14.1 UN number

ADR	RID	IMDG	IATA
UN 3077	UN 3077	UN 3077	UN 3077

14.2 UN proper shipping name

ADR: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (MANDIPROPAMID, CYMOXANIL)
RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (MANDIPROPAMID, CYMOXANIL)
IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (MANDIPROPAMID, CYMOXANIL)
IATA: Environmentally hazardous substance, solid, n.o.s. (MANDIPROPAMID, CYMOXANIL)

14.3 Transport hazard class(es)

ADR	RID	IMDG	IATA
9	9	9	9

14.4 Packing group

ADR	RID	IMDG
Packing group : III Classification Code : M7 Hazard Identification Number : 90 Labels : 9 Tunnel restriction code : (-)	Packing group : III Classification Code : M7 Hazard Identification Number : 90 Labels : 9	Packing group : III Labels : 9 EmS Code : F-A, S-F

IATA (Cargo)	IATA (Passenger)	
Packing instruction (cargo aircraft): 956 Packing instruction (LQ) : Y956 Packing group : III Labels : Miscellaneous	Packing instruction (passenger aircraft): 956 Packing instruction (LQ) : Y956 Packing group : III Labels : Miscellaneous	
Remarks: This product can be subject to exemptions when packaged in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids, or having a net mass of 5 kg or less for solids.		

14.5 Environmental hazards
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 var-iations in regional or country regulations.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Relevant EU provisions transposed through retained EU law
UK REACH List of restrictions (Annex 17): Not applicable
UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation: Not applicable
The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain): Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer: Not applicable
UK REACH List of substances subject to authorisation (Annex XIV): Not applicable
GB Export and import of hazardous chemicals - Prior Informed Consent (PIC) Regulation: Not applicable
Control of Major Accident Hazards Regulations 2015 (COMAH) E1 ENVIRONMENTAL HAZARDS

15.2 Chemical safety assessment
A Chemical Safety Assessment is not required for this substance when it is used in the specified ap-plications.

SECTION 16. OTHER INFORMATION

Full text of H-Statements
H302: Harmful if swallowed.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.
H373: May cause damage to organs through prolonged or repeated exposure.
H400: Very toxic 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
Eye Irrit.: Eye irritation
Repr.: Reproductive toxicity
Skin Sens.: Skin sensitisation
STOT RE: Specific target organ toxicity - repeated exposure
STOT SE: Specific target organ toxicity - single exposure
GB EH40: UK. EH40 WEL - Workplace Exposure Limits
Syngenta: Syngenta Occupational Exposure Limit
GB EH40 / TWA: Long-term exposure limit (8-hour TWA reference period)
Syngenta / TWA: Time weighted average

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 - (Quanti-tative) 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; 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

Further information

Classification of the mixture:		**Classification procedure:**
Acute Tox. 4	H302	Based on product data or assessment
Repr. 2	H361fd	Calculation method
STOT RE 2	H373	Calculation method

Aquatic Acute 1	H400	Calculation method
Aquatic Chronic 1	H410	Calculation method

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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CARIAL® Flex

A water dispersible granule containing 250 g/kg mandipropamid and 180 g/kg cymoxanil.

Warning

Harmful if swallowed.

Suspected of damaging fertility. Suspected of damaging the unborn child.

May cause damage to organs (blood, thymus) through prolonged or repeated exposure.

Very toxic to aquatic life with long lasting effects.

Obtain special instructions before use.

Do not breathe dust.

Wash skin thoroughly after handling.

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

IF exposed or concerned: Get medical advice/ attention.

Collect spillage.

Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.

Contains cymoxanil (ISO). May produce an allergic reaction.

MAPP 16629 **UFI:** CXA6-E025-G003-HCMM

IMPORTANT INFORMATION

FOR USE ONLY AS A FUNGICIDE

Crops/situations:	Maximum individual dose: (kg product / ha)	Maximum total dose:	Maximum number of treatments: (per crop)	Latest time of application:
Potato	0.6	-	6	7 days before harvest

Other specific restriction:

Application may only be made between 1 May and 31 August.

READ THE LABEL BEFORE USE. USING THIS PRODUCT IN A MANNER THAT IS INCONSISTENT WITH THE LABEL MAY BE AN OFFENCE. FOLLOW THE CODE OF PRACTICE FOR USING PLANT PROTECTION PRODUCTS.

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