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

1.1 Product identifier

Trade name	MIKAL PLUS
UFI	FQR0-V08M-500M-D3W6
Product code (UVP)	05862972

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

Use	Fungicide

1.3 Details of the supplier of the safety data sheet

Supplier	Bayer CropScience, S.L Avda. Baix Llobregat 3-5 08970 Sant Joan Despi (Barcelona) Spain
Telephone	+34(0)93 228 40 00 (during business hours only)
Telefax	+34(0)93 217 41 49
Responsible Department	Email: FDS-Spain@Bayer.com

1.4 Emergency telephone no.

Emergency telephone no.	National Institute of Toxicology and Forensic Sciences +34(0)91 562 04 20 (24 h response / 7 days)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification for Spain according to the 'Registro de Productos Fitosanitarios'

Eye irritation: Category 2
H319 Causes serious eye irritation.

Skin sensitisation: Category 1
H317 May cause an allergic skin reaction.

Carcinogenicity: Category 2
H351 Suspected of causing cancer.

Reproductive toxicity: Category 2
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.

Short-term (acute) aquatic hazard: Category 1

H400 Very toxic to aquatic life.

Long-term (chronic) aquatic hazard: Category 2
H411 Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling for Spain according to the 'Registro de Productos Fitosanitarios'

Hazard label for supply/use required.

Hazardous components which must be listed on the label:

- Fosetyl-Aluminium
- Folpet
- Cymoxanil

Signal word: Warning

Hazard statements

H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H351	Suspected of causing cancer.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H410	Very toxic to aquatic life with long lasting effects.
EUH401	To avoid risks to human health and the environment, comply with the instructions for use.
SP 1	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).

Precautionary statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P273	Avoid release to the environment.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P391	Collect spillage.
P501	Dispose of contents/container in accordance with local regulation.

2.3 Other hazards

No additional hazards known beside those mentioned.

Folpet: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB). Cymoxanil: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB). Fosetyl Aluminium: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).

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

Chemical nature

Water dispersible granules (WG)
Fosetyl-aluminium/Folpet/Cymoxanil 50:25:4 %

Hazardous components

Hazard statements according to Regulation (EC) No. 1272/2008

Name	CAS-No. / EC-No. / REACH Reg. No.	Classification REGULATION (EC) No 1272/2008	Conc. [%]
Fosetyl-Aluminium	39148-24-8 254-320-2	Eye Dam. 1, H318	50,00
Folpet	133-07-3 205-088-6	Acute Tox. 4, H332 Carc. 2, H351 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Acute 1, H400	25,00
Cymoxanil	57966-95-7 261-043-0	Acute Tox. 4, H302 STOT RE 2, H373 Repr. 2, H361fd Skin Sens. 1, H317 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	4,00

Further information

Folpet	133-07-3	M-Factor: 10 (acute)
CymoxanilCymoxanil	57966-95-7	M-Factor: 1 (acute), 1 (chronic)
Cymoxanil	57966-95-7	Oral: ATE = 360 mg/kg

For the full text of the H-Statements mentioned in this Section, see Section 16.

Particle characteristics

This substance/ mixture does not contain nanoforms (according to REACH Regulation)

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice	Remove contaminated clothing immediately and dispose of safely. When symptoms develop and persist, seek medical advice.
Skin contact	Wash off thoroughly with plenty of soap and water, if available with polyethyleneglycol 400, subsequently rinse with water.
Eye contact	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. Keep patient warm and at rest.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	The following symptoms may occur:, Skin, eye and mucous membrane irritation

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	There is no specific antidote. Treat symptomatically. In case of ingestion gastric lavage should be considered in cases of significant ingestions only within the first 2 hours. However, the application of activated charcoal and sodium sulphate is always advisable.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable	High volume water jet
5.2 Special hazards arising from the substance or mixture	Dangerous gases are evolved in the event of a fire., In the event of fire the following may be released:, Carbon monoxide (CO), Nitrogen oxides (NOx), Oxides of phosphorus, Sulphur oxides, Hydrogen chloride (HCl)

5.3 Advice for firefighters

Special protective equipment for firefighters	In the event of fire and/or explosion do not breathe fumes. Wear self-contained breathing apparatus and protective suit.
Further information	Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure being built up due to heat. Contain the spread of the fire-fighting media. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Precautions Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment. Keep unauthorized people away.

6.2 Environmental precautions Do not allow to get into surface water, drains and ground water.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.

Additional advice Check also for any local site procedures.

6.4 Reference to other sections Information regarding safe handling, see section 7.
Information regarding personal protective equipment, see section 8.
Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling Provide for appropriate exhaust ventilation and dust collection at machinery. Avoid dust formation.

Advice on protection against fire and explosion Keep away from heat and sources of ignition.

Hygiene measures Avoid contact with skin, eyes and clothing. Keep working clothes separately. Wash hands before breaks and immediately after handling the product. Remove soiled clothing immediately and clean thoroughly before using again. When using, do not eat, drink or smoke.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers Store in original container. Store in a place accessible by authorized persons only. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight.

Advice on common storage Keep away from food, drink and animal feedingstuffs.

Suitable materials Aluminium composite film (min. 0,007 mm Aluminium)

7.3 Specific end use(s) Refer to the label and/or leaflet.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Folpet	133-07-3	0,1 mg/m3		OES BCS*

		(TWA)		
Fosetyl-Aluminium	39148-24-8	5 mg/m3 (TWA)		OES BCS*

*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

8.2 Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection
Wear respirator conforming to EN136P3, EN14594 or EN14593-1 (continuous flow).
Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer's instructions regarding wearing and maintenance.

Hand protection
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 conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
Wash gloves when contaminated. Dispose of when contaminated inside, when perforated or when contamination on the outside cannot be removed. Wash hands frequently and always before eating, drinking, smoking or using the toilet.

Material	Nitrile rubber
Rate of permeability	> 480 min
Glove thickness	> 0,4 mm
Protective index	Class 6
Directive	Protective gloves complying with EN 374.

Eye protection
Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).

Skin and body protection
Wear standard coveralls and Category 3 Type 5 suit.
If there is a risk of significant exposure, consider a higher protective type suit.
Wear two layers of clothing wherever possible. Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Form	water-dispersible granules
Colour	beige
Odour	weak, characteristic

Odour Threshold	No data available
Melting point/ range	No data available
Boiling Point	No data available
Flammability	The product is not highly flammable.
Upper explosion limit	No data available
Lower explosion limit	No data available
Flash point	Not applicable
Auto-ignition temperature	No data available
Ignition temperature	395 °C
Minimum ignition energy	> 1.000 mJ
Self-accelarating decomposition temperature (SADT)	No data available
pH	ca. 3,0 - 4,0 (1 %) (23 °C) (deionized water)
Viscosity, dynamic	No data available
Viscosity, kinematic	No data available
Water solubility	dispersible
Partition coefficient: n-octanol/water	Folpet: log Pow: 3,017 Cymoxanil: log Pow: 0,66(pH 7) Fosetyl Aluminium: log Pow: -2,1
Vapour pressure	No data available
Density	No data available
Relative density	No data available
Bulk density	ca. 0,60 - 0,70 g/ml (loose)
Relative vapour density	No data available
Assessment nano particles	This substance/ mixture does not contain nanoforms (according to REACH Regulation)
Dust content	nearly dust-free

9.2 Other information

Explosivity	Not explosive 92/69/EEC, A.14 / OECD 113
Oxidizing properties	No oxidizing properties
Evaporation rate	No data available

Other physico-chemical properties	Further safety related physical-chemical data are not known.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity	Stable under recommended storage conditions.
Self heating	May self heat in case of storage in mass at high temperature.
10.2 Chemical stability	Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions	No hazardous reactions when stored and handled according to prescribed instructions.
10.4 Conditions to avoid	Extremes of temperature and direct sunlight.
10.5 Incompatible materials	Store only in the original container.
10.6 Hazardous decomposition products	No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

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

Acute oral toxicity	LD50 (Rat) > 2.000 mg/kg
Acute inhalation toxicity	Not relevant because of low dust formation.
Acute dermal toxicity	LD50 (Rat) > 2.000 mg/kg
Skin corrosion/irritation	No skin irritation (Rabbit)
Serious eye damage/eye irritation	Irritating to eyes. (Rabbit)
Respiratory or skin sensitisation	Skin: Non-sensitizing. (Guinea pig) OECD Test Guideline 406, Buehler test

Assessment STOT Specific target organ toxicity – single exposure

Folpet: Based on available data, the classification criteria are not met.
Cymoxanil: Based on available data, the classification criteria are not met.
Fosetyl Aluminium: Based on available data, the classification criteria are not met.

Assessment STOT Specific target organ toxicity – repeated exposure

Folpet did not cause specific target organ toxicity in experimental animal studies.
Cymoxanil caused specific target organ toxicity in experimental animal studies in the following organ(s): Blood, thymus, Eyes. Cymoxanil: May cause damage to organs (Blood, thymus, Eyes) through prolonged or repeated exposure.
Fosetyl Aluminium did not cause specific target organ toxicity in experimental animal studies.

Assessment mutagenicity

Folpet was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.
Cymoxanil was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.
Fosetyl Aluminium was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment carcinogenicity

Folpet caused at high dose levels an increased incidence of tumours in mice in the following organ(s): Duodenum. The mechanism that triggers tumours in rodents is not relevant for the low exposures encountered under normal use conditions. Folpet was not carcinogenic in a lifetime feeding study in rats.
Cymoxanil was not carcinogenic in lifetime feeding studies in rats and mice.
Fosetyl Aluminium was not carcinogenic in lifetime feeding studies in rats and mice.

Assessment toxicity to reproduction

Folpet did not cause reproductive toxicity in a two-generation study in rats.
Cymoxanil caused reduced sperm count in male rats at high doses, a reduced litter size and a reduced pup weight. Cymoxanil: Suspected of damaging fertility.
Fosetyl Aluminium did not cause reproductive toxicity in a two-generation study in rats.

Assessment developmental toxicity

Folpet did not cause developmental toxicity in rats and rabbits.
Cymoxanil caused an increased incidence of non-specific malformations, an increased incidence of variations. Cymoxanil suspected of damaging the unborn child.
Fosetyl Aluminium did not cause developmental toxicity in rats and rabbits.

Aspiration hazard

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

11.2 Information on other hazards

Endocrine disrupting properties

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.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 (Oncorhynchus mykiss (rainbow trout)) 0,304 mg/l Exposure time: 96 h
Chronic toxicity to fish	Oncorhynchus mykiss (rainbow trout) NOEC: 0,044 mg/l Exposure time: 90 d The value mentioned relates to the active ingredient cymoxanil.
Toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 3,9 mg/l Exposure time: 48 h
Toxicity to aquatic plants	EC50 (Raphidocelis subcapitata (freshwater green alga)) 12,6 mg/l

Growth rate; Exposure time: 72 h

12.2 Persistence and degradability

Biodegradability	Folpet: rapidly biodegradable Cymoxanil: Not rapidly biodegradable Fosetyl Aluminium: rapidly biodegradable
Koc	Folpet: Koc: 304 Cymoxanil: Koc: 14,4 - 107,8 Fosetyl Aluminium: Koc: 0,1

12.3 Bioaccumulative potential

Bioaccumulation	Folpet: Bioconcentration factor (BCF) 56 Does not bioaccumulate. Cymoxanil: Does not bioaccumulate. Fosetyl Aluminium: Does not bioaccumulate.

12.4 Mobility in soil

Mobility in soil	Folpet: Moderately mobile in soils Cymoxanil: criterion of mobility not fulfilled Fosetyl Aluminium: criterion of mobility not fulfilled

12.5 Results of PBT and vPvB assessment

PBT and vPvB assessment	Folpet: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB). Cymoxanil: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB). Fosetyl Aluminium: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).

12.6 Endocrine disrupting properties

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

Additional ecological information	No other effects to be mentioned.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product	In accordance with current regulations and, if necessary, after consultation with the site operator and/or with the responsible authority, the product may be taken to a waste disposal site or incineration plant.
Contaminated packaging	Empty remaining contents. Do not re-use empty containers. Emptied and rinsed containers have to be taken to SIGFITO (Sistema Integrado de Gestión de envases FITOsanitarios), the collection system for packaging materials in agriculture.
Waste key for the unused product	**02 01 08*** agrochemical waste containing hazardous substances

SECTION 14: TRANSPORT INFORMATION

ADR/RID/ADN

14.1 UN number	**3077**
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (FOLPET MIXTURE)
14.3 Transport hazard class(es)	9
14.4 Packaging Group	III
14.5 Environm. Hazardous Mark	YES
Hazard no.	90
Tunnel Code	-

This classification is in principle not valid for carriage by tank vessel on inland waterways. Please refer to the manufacturer for further information.

IMDG

14.1 UN number	**3077**
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (FOLPET MIXTURE)
14.3 Transport hazard class(es)	9
14.4 Packaging Group	III
14.5 Marine pollutant	YES

IATA

14.1 UN number	**3077**
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (FOLPET MIXTURE)
14.3 Transport hazard class(es)	9
14.4 Packaging Group	III
14.5 Environm. Hazardous Mark	YES

14.6 Special precautions for user
See sections 6 to 8 of this Safety Data Sheet.

14.7 Transport in bulk according to IMO instruments
No transport in bulk according to the IBC Code.

Further Information	Exempt from class 4.2, if transported in packagings smaller than 3 m3 (ADR §2.2.42.1.5; IMDG §2.4.3.2.3.2; IATA §3.4.2.3.3.1).

SECTION 15: REGULATORY INFORMATION

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

Further information

WHO-classification: III (Slightly hazardous)

Registration No. (MAPA) 18.984

Major Accident Hazard Legislation	Subjected to the "Disasters and Major Accidents Act". Annex I, list of dangerous substances, No. E1

15.2 Chemical safety assessment

A chemical safety assessment is not required.

SECTION 16: OTHER INFORMATION

Text of the hazard statements mentioned in Section 3

H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H351	Suspected of causing cancer.
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.

Abbreviations and acronyms

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute toxicity estimate
CAS-Nr.	Chemical Abstracts Service number
Conc.	Concentration
EC-No.	European community number
ECx	Effective concentration to x %
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
EN	European Standard
EU	European Union
IATA	International Air Transport Association

IBC	International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)
ICx	Inhibition concentration to x %
IMDG	International Maritime Dangerous Goods
LCx	Lethal concentration to x %
LDx	Lethal dose to x %
LOEC/LOEL	Lowest observed effect concentration/level
MARPOL	MARPOL: International Convention for the prevention of marine pollution from ships
N.O.S.	Not otherwise specified
NOEC/NOEL	No observed effect concentration/level
OECD	Organization for Economic Co-operation and Development
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
TWA	Time weighted average
UN	United Nations
VLA	Spain: exposure limit
VLA-EC	Spain: Short time exposure limit
VLA-ED	Valor Límite Ambiental. Exposición Diaria
WHO	World health organisation

The information contained within this Safety Data Sheet is in accordance with the guidelines established by Regulation (EU) 1907/2006 and Regulation (EU) 2020/878 amending Regulation (EU) No 1907/2006 and any subsequent amendments. This data sheet complements the user's instructions, but does not replace them. The information it contains is based on the knowledge available about the product concerned at the time it was compiled. Users are further reminded of the possible risks of using a product for purposes other than those for which it was intended. The required information complies with current EEC legislation. Addressees are requested to observe any additional national requirements.

Reason for Revision: The following sections have been revised: Section 3: Composition / Information on Ingredients. Section 11: Toxicological information on STOT (Specific Target Organ Toxicity) and CMR (Carcinogenic, Mutagenic and toxic to Reproduction).

Changes since the last version are highlighted in the margin. This version replaces all previous versions.