



SAFETY DATA SHEET

OptiYield BioZest

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

1.1 Product identifier

Trade name:	OptiYield BioZest
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1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses of the substance or mixture:	foliar spray Restricted to professional users.	
Use descriptors (UK REACH):	Sectors of use	Description
	SU 1	Agriculture, forestry, fishery
Uses advised against:	None known.	

1.3 Details of the supplier of the safety data sheet

Company and address:	Microferm Ltd Spring Lane North, Malvern Link. WR14 1BU Worcestershire United Kingdom +44 1684 568434 https://www.microferm.co.uk/
Contact person:	Microferm Technical Department
E-mail:	sds@microferm.co.uk
Supplier Name and address:	Emerald Research Ltd Unit 2, Tech Box Hub The AgriTech Centre, Hartpury University, GL19 3BE Gloucestershire United Kingdom +44 1242 506206 https://www.emeraldresearchltd.com/
Contact person:	Emerald Research Technical Department
E-mail:	info@emeraldresearchltd.com
Revision:	17/05/2024
SDS Version:	1.0

1.4 Emergency telephone number

Contact The National Poisons Information Service (dial 111, 24 h service).
See section 4 "First aid measures".



SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not classified according to Regulation (EC) No. 1272/2008 (CLP) as retained and amended in UK law.

2.2 Label elements

Hazard pictogram(s):	Not applicable.
Signal word:	Not applicable.
Hazard statement(s):	Not applicable.
Precautionary statement(s):	
General:	-
Prevention:	-
Response:	-
Storage:	-
Disposal:	-
Hazardous substances:	None known.
Additional labelling:	EUH210, Safety data sheet available

2.3 Other hazards

Additional warnings:	This mixture/product does not contain any substances known to fulfil the criteria for PBT and vPvB classification. This product does not contain any substances considered to be endocrine disruptors in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.
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SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable. This product is a mixture.

3.2 Mixtures

Product/substance	Identifiers	% w/w	Classification	Note
Sodium benzoate	CAS No.: 532-32-1 EC No.: 208-534-8 UK-REACH: Index No.:	1-3%	Eye Irrit. 2, H319	
1,2-benzisothiazol-3(2H)-one;1,2-benzisothiazolin-3-one	CAS No.: 2634-33-5 EC No.: 220-120-9 UK-REACH: Index No.: 613-088-00-6	<0.05%	Acute Tox. 4, H302 Skin Irrit. 2, H315 Skin Sens. 1, H317 Eye Dam. 1, H318 Aquatic Acute 1, H400 (M=10)	



See full text of H-phrases in section 16. Occupational exposure limits are listed in section 8, if these are available.

Other information

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SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General information:	In the case of accident: Contact a doctor or casualty department – take the label or this safety data sheet. Contact a doctor if in doubt about the injured person's condition or if the symptoms persist. Never give an unconscious person water or other drink.
Inhalation:	Upon breathing difficulties or irritation of the respiratory tract: Bring the person into fresh air and stay with him/her.
Skin contact:	Upon irritation: rinse with water. In the event of continued irritation, seek medical assistance.
Eye contact:	If in eyes: Flush eyes with water or saline water (20-30 °C) for at least 5 minutes. Remove contact lenses. Seek medical assistance and continue flushing during transport.
Ingestion:	If the person is conscious, rinse the mouth with water and stay with the person. Never give the person anything to drink. In case of malaise, seek medical advice immediately and bring the safety data sheet or label from the product. Do not induce vomiting, unless recommended by the doctor. Have the person lean forward with head down to avoid inhalation of or choking on vomited material.
Burns:	Not applicable.

4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

Information to medics

Bring this safety data sheet or the label from this product.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Not applicable.

5.2 Special hazards arising from the substance or mixture

Fire will result in dense smoke. Exposure to combustion products may harm your health. Closed containers, which are exposed to fire, should be cooled with water. Do not allow fire- extinguishing water to enter the sewage system and nearby surface waters.

If the product is exposed to high temperatures, e.g. in the event of fire, dangerous decomposition compounds are produced. These are:

Carbon oxides (CO / CO₂)



Some metal oxides

5.3 Advice for firefighters

Fire fighters should wear appropriate personal protective equipment.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Contaminated areas may be slippery.

6.2 Environmental precautions

Avoid discharge to lakes, streams, sewers, etc. Keep unauthorized persons away from the spill

6.3 Methods and material for containment and cleaning up

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.

Wherever possible cleaning should be performed with normal cleaning agents. Avoid use of solvents.

6.4 Reference to other sections

See section 13 "Disposal considerations" on handling of waste.

See section 8 "Exposure controls/personal protection" for protective measures.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Smoking, drinking and consumption of food is not allowed in the work area.

See section 8 "Exposure controls/personal protection" for information on personal protection.

7.2 Conditions for safe storage, including any incompatibilities

Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage material:	Keep only in original packaging.
Storage temperature:	Dry, cool and well ventilated
Incompatible materials:	Acids

7.3 Specific end use(s)

This product should only be used for applications quoted in section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

No substances are listed in the national list of substances with an occupational exposure limit.

DNEL

1,2-benzisothiazol-3(2H)-one;1,2-benzisothiazolin-3-one

Duration:	Route of exposure:	DNEL:
Long term – Systemic effects - General population	Dermal	345 µg/kgbw/day
Long term – Systemic effects - Workers	Dermal	966 µg/kgbw/day
Long term – Systemic effects - General population	Inhalation	1.2 mg/m ³
Long term – Systemic effects - Workers	Inhalation	6.81 mg/m ³



Sodium benzoate

Duration:	Route of exposure:	DNEL:
Long term – Systemic effects - General population	Dermal	31.25 mg/kg bw/day
Long term – Systemic effects - Workers	Dermal	62.5 mg/kg bw/day
Long term – Local effects - General population	Inhalation	60 µg/m ³
Long term – Local effects - Workers	Inhalation	100 µg/m ³
Long term – Systemic effects - General population	Inhalation	1.5 mg/m ³
Long term – Systemic effects - Workers	Inhalation	3 mg/m ³
Long term – Systemic effects - General population	Oral	16.6 mg/kg bw/day

PNEC

1,2-benzisothiazol-3(2H)-one;1,2-benzisothiazolin-3-one

Route of exposure:	Duration of Exposure:	PNEC:
Freshwater		4.03 µg/L
Freshwater sediment		49.9 µg/kg
Intermittent release (freshwater)		1.1 µg/L
Intermittent release (marine water)		110 ng/L
water		403 ng/L
Marine water sediment		4.99 µg/kg
Sewage treatment plant		1.03 mg/L
Soil		3 mg/kg

Sodium benzoat

Route of exposure:	Duration of Exposure:	PNEC:
Freshwater		581 µg/L
Freshwater sediment		2.5 mg/kg
Intermittent release (freshwater)		58.1 µg/L
Intermittent release (marine water)		5.81 ng/L
Marine water		58.1 µg/L
Marine water sediment		250 µg/kg
Predators		300 mg/kg
Sewage treatment plant		10 mg/L
Soil		158.7 µg/kg



8.2 Exposure controls


Apply general control to prevent unnecessary exposure

General recommendations:	Smoking, drinking and consumption of food is not allowed in the work area.
Exposure scenarios:	There are no exposure scenarios implemented for this product.
Exposure limits:	Occupational exposure limits have not been defined for the substances in this product.
<i>Appropriate technical measures:</i>	Apply standard precautions during use of the product. Avoid inhalation of vapours.
<i>Hygiene measures:</i>	In between use of the product and at the end of the working day all exposed areas of the body must be washed thoroughly. Pay special attention to hands, forearms and face.
<i>Measures to avoid environmental exposure:</i>	No specific requirements.


Individual protection measures, such as personal protective equipment

<i>Generally:</i>	Use only UKCA marked protective equipment.
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Respiratory Equipment:

Type	Class	Colour	Standards	
SL	P3	White	EN149	

Skin protection:

Recommended	Type/Category	Standards	
Dedicated work clothing should be worn.	-	-	

Hand protection:

Material	Glove thickness (mm)	Breakthrough time (min.)	Standards	
Cotton/Nitril	-	> 240	EN374-2, EN374-3, EN388	

Eye protection:

No specific requirements.



SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state:	Liquid
Colour:	Brown
Odour / Odour threshold:	Mild
pH:	Testing not relevant or not possible due to the nature of the product.
Density (g/cm ³):	1.24-1.26
Kinematic viscosity:	Testing not relevant or not possible due to the nature of the product.
Particle characteristics:	Not applicable - product is a liquid

Phase changes

Melting point/Freezing point (°C):	Testing not relevant or not possible due to the nature of the product.
Softening point/range (waxes and pastes) (°C):	Does not apply to liquids.
Boiling point (°C):	Testing not relevant or not possible due to the nature of the product.
Vapour pressure:	Testing not relevant or not possible due to the nature of the product.
Relative vapour density:	Testing not relevant or not possible due to the nature of the product.
Decomposition temperature (°C):	Testing not relevant or not possible due to the nature of the product

Solubility

Solubility in water:	Testing not relevant or not possible due to the nature of the product.
n-octanol/water coefficient (LogKow):	Testing not relevant or not possible due to the nature of the product.
Solubility in fat (g/L):	Testing not relevant or not possible due to the nature of the product.

9.2 Other information

<i>Oxidizing properties:</i>	Testing not relevant or not possible due to the nature of the product.
<i>Other physical and chemical parameters:</i>	No data available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No data available.



10.2 Chemical stability

The product is stable under the conditions, noted in section 7 "Handling and storage".

10.3 Possibility of hazardous reactions

None known.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Acids

10.6 Hazardous decomposition products

The product is not degraded when used as specified in section 1.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008 as retained and amended in UK law

Acute toxicity

Product/substance	Sodium benzoate
Species:	Rat
Route of exposure:	Oral
Test:	LD50
Result:	2100 mg/kg

Skin corrosion/irritation

Product/substance	Sodium benzoate
Test method:	OECD 404
Result:	No adverse effect observed (Not irritating)

Serious eye damage/irritation

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

Respiratory sensitisation

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

Skin sensitization

Product/substance	Sodium benzoate
Test method:	OECD 429
Species:	Mouse
Result:	No adverse effect observed (not sensitising)

Germ cell mutagenicity

Product/substance	Sodium benzoate
Test method:	OECD 471
Conclusion:	No adverse effect observed

Product/substance	Sodium benzoate
Test method:	OECD 475
Conclusion:	No adverse effect observed



Carcinogenicity

Product/substance	Sodium benzoate
Species:	Rat
Route of exposure:	Oral
Test:	NOAEL
Result:	175 mg/kg bw/day

Reproductive toxicity

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

STOT-single exposure

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

STOT-repeated exposure

Product/substance	Sodium benzoate
Species:	Rat
Route of exposure:	Oral
Test:	NOAEL
Result:	1000 mg/kg bw/day

Aspiration hazard

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

11.2 Information on other hazards Long term effects

None known.

Endocrine disrupting properties

This mixture/product does not contain any substances known to have hormone-disrupting properties in relation to health.

Other information

None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Product/substance	Sodium benzoate
Species:	Fish, Pimephales promelas
Duration:	96 hours
Test:	LC50
Result:	484 mg/L

Product/substance	Sodium benzoate
Species:	Daphnia, Daphnia magna
Duration:	96 hours
Test:	EC50
Result:	>100 mg/L

Product/substance	Sodium benzoate
Species:	Algae, Pseudokirchneriella subcapitata
Test method:	OECD 201
Duration:	72 hours
Test:	EC50
Result:	30 mg/L



Product/substance	Sodium benzoate
Species:	Fish, Brachydanio rerio
Test:	NOEC
Result:	10 mg/L

12.2 Persistence and degradability

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

12.3 Bioaccumulative potential

Product/substance	Sodium benzoate
LogKow:	1.88
Conclusion:	-

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

This mixture/product does not contain any substances known to fulfil the criteria for PBT and vPvB classification.

12.6 Endocrine disrupting properties

This mixture/product does not contain any substances considered to have endocrine-disrupting properties in relation to the environment.

12.7 Other adverse effects

None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product is not covered by regulations on dangerous waste.

Regulation (EU) No 1357/2014 of 18 December 2014 on waste as retained and amended in UK law.

EWC code

Not applicable.

Specific labelling

Contaminated packing

Packaging containing residues of the product must be disposed of similarly to the product.

SECTION 14: TRANSPORT INFORMATION

	14.1 UN / ID	14.2 UN proper shipping name	14.3 Hazard class(es)	14.4 PG*	14.5 Env* *	Other information :
ADR	-	-	-	-	-	-
IMDG	-	-	-	-	-	-
IATA	-	-	-	-	-	-

* Packing group

** Environmental hazards



14.6 Additional information

Not dangerous goods according to ADR, IATA and IMDG.

14.6. Special precautions for user

Not applicable.

14.7. Maritime transport in bulk according to IMO instruments

No data available.

SECTION 15: REGULATORY INFORMATION

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

Restrictions for application:	Restricted to professional users.
Demands for specific education	No specific requirements.
SEVESO - Categories / dangerous substances:	Not applicable.
Additional information:	Not applicable.
Sources:	Regulation (EU) No 1357/2014 of 18 December 2014 on waste as retained and amended in UK law. Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP) as retained and amended in UK law. Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as retained and amended in UK law.

15.2 Chemical safety assessment

No

SECTION 16: OTHER INFORMATION

Full text of H-phrases as mentioned in section 3

H302, Harmful if swallowed. H315,
Causes skin irritation.
H317, May cause an allergic skin reaction. H318,
Causes serious eye damage.
H319, Causes serious eye irritation.
H400, Very toxic to aquatic life.

The full text of identified uses as mentioned in section 1

SU 1 = Agriculture, forestry, fishery

Abbreviations and acronyms

ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate BCF
= Bioconcentration Factor CAS =
Chemical Abstracts Service
CE = Conformité Européenne (European conformity)
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008] CSA =
Chemical Safety Assessment
CSR = Chemical Safety Report



DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EINECS = European Inventory of Existing Commercial chemical Substances ES = Exposure Scenario
EUH statement = CLP-specific Hazard statement EuPCS = European Product Categorisation System EWC = European Waste Catalogue
GHS = Globally Harmonized System of Classification and Labelling of Chemicals GWP = Global warming potential
IARC = International Agency for Research on Cancer (IARC) IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OECD = Organisation for Economic Co-operation and Development
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
RRN = REACH Registration Number
SCL = A specific concentration limit
SVHC = Substances of Very High Concern
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure STOT-SE = Specific Target Organ Toxicity - Single Exposure
TWA = Time weighted average
UN = United Nations
UVBC = Unknown or variable composition, complex reaction products or of biological materials
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative

Additional information

Not applicable.

The safety data sheet is validated by

Simon Fox MD Emerald Research Ltd

Other

A change (in proportion to the last essential change (first cipher in SDS version, see section 1)) is marked with a triangle.

The information in this safety data sheet applies only to this specific product (mentioned in section 1) and is not necessarily correct for use with other chemicals/products.

It is recommended to hand over this safety data sheet to the actual user of the product. Information in this safety data sheet cannot be used as a product specification.

Country-language: GB-en