



Ceratavo[®] Plus

syngenta.

GROUP 7 FUNGICIDE



CERATAVO[®] Plus is an emulsifiable concentrate containing 100 g/l (10.2% w/w) benzovindiflupyr.
For the control of a wide range of diseases on wheat, barley and triticale.

PROTECT FROM FROST
STORE ABOVE 5°C
SHAKE WELL BEFORE USE

FOR PROFESSIONAL USE ONLY

To avoid risks to human health and the environment comply with the instructions for use.

CERATAVO[®] Plus is an emulsifiable concentrate containing 100 g/l (10.2% w/w) benzovindiflupyr.

Danger.

Harmful if swallowed or if inhaled.

May cause an allergic skin reaction.

Causes serious eye damage.

May cause respiratory irritation.

Very toxic to aquatic life with long lasting effects.

Keep out of reach of children.

Avoid breathing dust/fume/gas/mist/vapours/spray.

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

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

IF ON SKIN: Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical advice/attention.

IF IN EYES: Rinse cautiously with water for several minutes.

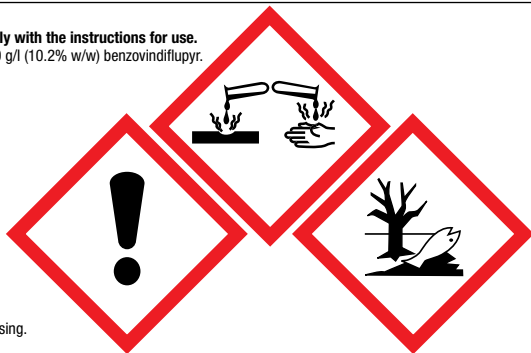
Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTRE or doctor/physician.

Collect spillage.

Dispose of contents/container to a licensed hazardous-waste disposal plant/ contractor or collection

site except for empty triple rinsed clean containers which can be disposed of as non-hazardous waste.



PCS No: 05969

UFI: 2EU4-20Y0-F00V-0ASN

IN CASE OF TOXIC OR TRANSPORT EMERGENCY RING +44 (0) 1484 538444 ANYTIME

Authorisation Holder	Marketing Company
Syngenta UK Limited CPC4, Capital Park, Fulbourn, Cambridge, CB21 5XE Tel: +44 (0) 1223 883400	Syngenta Ireland Ltd Block 6, Cleaboy Business Park, Old Kilmeaden Road, Waterford, Ireland Tel: (051) 377203

L1098347 IREL/12A PPE 4174658

5 litres

Product names marked ® or ™, the ALLIANCE FRAME
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CONDITIONS OF USE

FOR USE ONLY AS PROFESSIONAL FUNGICIDE

Crop	Maximum individual dose (litres/hectare/crop)	Maximum no. of treatments (per crop)	Latest time of application
Winter and spring wheat, and triticale.	0.75	1	Up to and including anthesis complete (GS 69).
Winter and spring barley.	0.75	1	Up to and including complete ear emergence (GS 59).

Other Specific Restrictions:

The earliest time of application is GS31.

A maximum of 2 foliar applications of product(s) containing SDHIs can be applied to any cereal crop.

Apply SDHI fungicides always in mixtures.

The mixture partner:

- Should provide satisfactory disease control when used alone on the target disease.
- Must have a different mode of action.

This product must not be applied via hand-held equipment.

ADDITIONAL SAFETY INFORMATION**(a) Operator protection**

WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS), SUITABLE PROTECTIVE GLOVES AND FACE PROTECTION (FACESHIELD) when handling the concentrate.

WASH SPLASHES from skin immediately.

WHEN USING DO NOT EAT, DRINK OR SMOKE.

WASH HANDS AND EXPOSED SKIN before meals and after work.

FOR USE BY TRACTOR MOUNTED/TRAILED SPRAYER ONLY.

(b) Environmental protection

To protect aquatic organisms respect an unsprayed buffer zone of 10m to surface waters.*

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

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.

KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.

EMPTY CONTAINER COMPLETELY and dispose of safely.

* To reduce this buffer zone please refer to PRCD Guidance - STRIPE (Surface water Tool for Reducing the Impact of Pesticides in the Environment).

This leaflet is part of the approved Product Label.

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.

GENERAL INFORMATION

Benzovindiflupyr is an orthosubstituted pyrazole carboxamide fungicide belonging to the sub-class of the benzonorbornenes. Benzovindiflupyr is an SDHI inhibitor (FRAC group #7 carboxamides). Benzovindiflupyr is predominantly protectant substance.

CERATAVO® PLUS should be used as a protectant treatment or in the earliest stages of disease development.

DISEASES CONTROLLED

CERATAVO PLUS can be used to control the following diseases:

Disease	Wheat	Triticale	Barley
Septoria leaf blotch (<i>Zymoseptoria tritici</i>)	C	C	-
Glume blotch (<i>Septoria nodorum</i>)	C	C	-
Yellow rust (<i>Puccinia striiformis</i>)	C	C	-
Brown rust	C	C	C
<i>Rhynchosporium secalis</i> (Leaf scald)	-	R	R
Net blotch (<i>Pyrenophora teres</i>)	-	-	MC
<i>Ramularia collo-cygni</i>	-	-	MC
Crown rust (<i>Puccinia coronata</i>)	-	-	-

C = Control

MC = Moderate Control

R = Reduction

RESISTANCE MANAGEMENT

CERATAVO PLUS must always be tank mixed with another fungicide(s) from different cross resistance group(s) /different mode(s) of action which when used alone, gives effective control of the same target disease(s). Products should be applied at robust rates. In any tank mix the SDHI should be applied in a balanced mixture.

CERATAVO PLUS should be used in accordance with the instructions for use for the target diseases at the specified growth stages indicated. Use CERATAVO PLUS as part of an Integrated Crop Management (ICM) strategy incorporating other methods of control, including where appropriate other fungicides with a different mode of action. For further advice on resistance management contact your agronomist or specialist advisor, and visit the FRAG-UK website.

You must not apply more than two foliar applications of products containing SDHI inhibitors to any cereal crop. Reduced application rates and split applications of SDHI products must not be used. Mixtures of two or more SDHI fungicides do not provide an anti-resistance strategy. Each application of such a mixture counts as one SDHI application. Users should refer to current FRAC guidelines for SDHI compounds.

Isolates of *Septoria* leaf blotch with reduced sensitivity to SDHI fungicides have been detected.

Disease control may be reduced if strains of pathogens less sensitive to CERATAVO PLUS develop.

CROP SPECIFIC INFORMATION

Crops and growing conditions

CERATAVO PLUS can be used on all varieties of winter and spring wheat, winter and spring barley and triticale. Apply CERATAVO PLUS under good growing conditions with adequate soil moisture. Avoid poor growing conditions which may give less reliable results. Effectiveness using three star drift reduction technology may be reduced.

Timing

Always inspect crops to assess disease development immediately before spraying. Best results will be achieved from applications made as a protectant treatment or in the earliest stages of disease development following a disease risk assessment or the use of appropriate decision support systems. CERATAVO PLUS is accepted by BBPA (British Beer and Pubs Association) for use on malting barley provided application is made before the beginning of flowering (GS 61). Latest timing in malting barley is therefore up to and including complete ear emergence (GS 59).

Rates of use

Apply CERATAVO PLUS at 0.75 litres per hectare.

FOLLOWING CROPS

There are no restrictions on succeeding crops in a normal rotation.

MIXING AND SPRAYING

Mixing Procedure

Make sure the sprayer is set to give an even application at the correct volume. Fill the spray tank with half the required volume of water and begin agitation. Add the required amount of CERATAVO PLUS to the spray tank and allow to disperse before adding any other product. Add the rest of the water and continue to agitate the mixture thoroughly. Always agitate during spraying.

Spray Volume and Application

Apply CERATAVO PLUS in a recommended 100 - 400 litres of water per hectare through conventional crop spraying equipment. The higher spray volumes are recommended where the crop is dense or disease pressure/risk is high to ensure good penetration to the lower leaves and stem bases. Disease control may be compromised by reducing water volumes, where good spray coverage is difficult to achieve. A spray pressure of 2-3 bars is recommended. Effectiveness using three star drift reduction technology may be reduced.

After Spraying

Thoroughly wash out sprayer three times according to manufacturer's guidelines and dispose of washing and clean containers according to local water authority guidelines.

ADDITIONAL PRODUCT SAFETY INFORMATION

This section does not form part of the label.

Safety Data Sheet v10.0

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

1.1 Product Identifier

Trade name: CERATAVO PLUS

Design code: A15457H

Product Registration number: PCS 05969

1.2 Relevant Identified Uses of the substance or mixture and uses advised against

Use of the Substance/Mixture: Fungicide

Recommended restrictions on use: professional use

1.3 Details of the supplier of the safety data sheet

Company: Syngenta Ireland Limited

Block 6 Cleaboy Business Park, Old Kilmeaden Road, Waterford, Ireland

Telephone: (051) 377203

Telefax: (051) 354748

E-mail address of person responsible for the SDS: cropsales.ie@syngenta.com

1.4 Emergency telephone number

Emergency phone No.: Syngenta +44 1484 538444
Poisons Information Centre of Ireland
Members of Public: +353 (1) 809 2166. (8.00 a.m. to 10.00 p.m. 7 days a week)
Healthcare Professionals: +353 (1) 809 2566 (24-hour service)

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Acute toxicity, Category 4 - H302: Harmful if swallowed.

Acute toxicity, Category 4 - H332: Harmful if inhaled.

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, Respiratory system - H335: May cause respiratory irritation.

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	H302+H332 Harmful if swallowed or if inhaled. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H335 May cause respiratory irritation. H410 Very toxic to aquatic life with long lasting effects.
Precautionary Statements	P102 Keep out of reach of children. P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. P264 Wash hands thoroughly after handling P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P302+P352 IF ON SKIN: Wash with plenty of soap and water. P304+P340+P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. P305+P351+P338+P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. P333+P313 If skin irritation or rash occurs: 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 triple rinsed clean containers which can be disposed for as non-hazardous waste.

Hazardous components which must be listed on the label:

mixture of octanoic acid- decanoic acid- N,N-dimethylamide

poly(oxy-1,2-ethanediyl), alpha-(9Z)-9-octadecenyl-omega-hydroxybenzovindiflupyr (ISO)

Additional Labelling

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.

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)
mixture of octanoic acid- decanoic acid- N,N-dimethylamide	1118-92-9 214-272-5 01-2119974115-37	Skin Irrit. 2; H315 Eye Dam. 1; H318 STOT SE 3; H335 (Respiratory system)	>= 20 - < 30
hydrocarbons, C10-C13, aromatics, <1% naphthalene	Not Assigned 922-153-0 01-2119451097-39	Asp. Tox. 1; H304 Aquatic Chronic 2; H411 EUH066	>= 20 - < 25
poly(oxy-1,2-ethanediyl), alpha-(9Z)-9-octadecenyl-omega-hydroxy-benzovindiflupyr (ISO)	9004-98-2 500-016-2 1072957-71-1 616-218-00-X	Acute Tox. 4; H302 Eye Dam.1; H318 Acute Tox.3; H301 Acute Tox.3; H331 Aquatic Acute1; H400 Aquatic Chronic1; H410 M-Factor (Acute aquatic toxicity): 100 M-Factor (Chronic aquatic toxicity): 100	>= 20 - < 30 >= 10 - < 20
poly(oxy-1,2-ethanediyl), -[2,4,6-tris(1-phenylethyl)phenyl]- -hydroxy-naphthalene	99734-09-5 91-20-3 202-049-5 601-052-00-2	Aquatic Chronic 3; H412 Flam. Sol. 2; H228 Acute Tox. 4; H302 Carc. 2; H351 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	>= 1 - < 2.5 >= 1 - < 2.5
Substances with a workplace exposure limit :			
cellulose, ethyl ether	9004-57-3		>= 1 - < 10

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 Safety Data Sheet with you when calling the emergency number, a poison control center or physician, or going for treatment.

If inhaled: 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.

In case of 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.

In case of 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.

If swallowed: If swallowed, seek medical advice immediately and show this container or label. Do not induce vomiting: contains petroleum distillates and/or aromatic solvents.

4.2 Most Important symptoms and effects, both acute and delayed

Symptoms: Aspiration may cause pulmonary oedema and pneumonitis.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: There is no specific antidote available. Treat symptomatically. Do not induce vomiting: contains petroleum distillates and/or aromatic solvents.

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: 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 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting: 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

Special protective equipment for firefighters: Wear full protective clothing and self-contained breathing apparatus.

Further information: 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

Personal precautions: Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions: Prevent further leakage or spillage if safe to do so. 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 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). 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: No special protective measures against fire required. 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: No special storage conditions required. 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
hydrocarbons, C10-C13, aromatics, <1% naphthalene	Not Assigned	TWA	8 ppm 50 mg/m ³	SUPPLIER

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
benzovindiflupyr (ISO)	1072957-71-1	TWA	1 mg/m ³	SYNGENTA
cellulose, ethyl ether	9004-57-3	TWA	10 mg/m ³	SUPPLIER
naphthalene	91-20-3	TWA	10 ppm 50 mg/m ³	91/322/EEC
Further information: Indicative				
		OELV - 8 hrs (TWA)	10 ppm 50 mg/m ³	IE OEL

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

Substance name	End Use	Exposure routes	Potential health effects	Value
benzovindiflupyr (ISO)	Workers	Inhalation	Long-term systemic effects	0.478 mg/m ³
	Workers	Inhalation	Acute systemic effects	1.13 mg/m ³
	Workers	Dermal	Long-term systemic effects	3.33 mg/kg
	Consumers	Inhalation	Long-term systemic effects	0.119 mg/m ³
	Consumers	Dermal	Long-term systemic effects	1.67 mg/kg
mixture of octanoic acid- decanoic acid- N,N-dimethylamide	Consumers	Oral	Long-term systemic effects	0.049 mg/kg
	Workers	Inhalation	Long-term systemic effects	166.67 mg/m ³
	Workers	Dermal	Long-term systemic effects	23.81 mg/kg
	Consumers	Inhalation	Long-term systemic effects	50 mg/m ³
	Consumers	Dermal	Long-term systemic effects	14.29 mg/kg
poly(oxy-1,2- ethanediyl), alpha- (9Z)-9 octadecenylomega- hydroxy-	Consumers	Oral	Long-term systemic effects	14.29 mg/kg
	Workers	Inhalation	Long-term systemic effects	294 mg/m ³
	Workers	Dermal	Long-term systemic effects	2080 mg/kg
	Consumers	Inhalation	Long-term systemic effects	87 mg/m ³
	Consumers	Dermal	Long-term systemic effects	1250 mg/kg
hydrocarbons, C10- C13, aromatics, <1% naphthalene	Consumers	Oral	Long-term systemic effects	25 mg/kg
	Workers	Inhalation	Long-term systemic effects	151 mg/m ³
	Workers	Dermal	Long-term systemic effects	12.5 mg/kg
	Consumers	Inhalation	Long-term systemic effects	32 mg/m ³
	Consumers	Dermal	Long-term systemic effects	7.5 mg/kg
naphthalene	Consumers	Oral	Long-term systemic effects	7.5 mg/kg
	Workers	Inhalation	Long-term systemic effects	25 mg/m ³
	Workers	Inhalation	Long-term local effects	25 mg/m ³
	Workers	Dermal	Long-term systemic effects	3.57 mg/kg

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

Substance name	Environmental Compartment	Value
benzovindiflupyr (ISO)	Fresh water	0.000095 mg/l
	Secondary poisoning	2 mg/kg
	Soil	0.041 mg/kg
	Marine water	0.000009 mg/l
	Fresh water sediment	0.053 mg/kg
	Sewage treatment plant	100 mg/l
	Marine sediment	0.005 mg/kg
mixture of octanoic aciddecanoic acid- N,Ndimethylamide	Fresh water	0.026 mg/l
	Marine water	0.0026 mg/l

Substance name	Environmental Compartment	Value
	Intermittent use/release	0.077 mg/l
	Sewage treatment plant	2.12 mg/l
	Fresh water sediment	0.318 mg/kg
	Marine sediment	0.0318 mg/kg
	Soil	5.23 mg/kg
poly(oxy-1,2-ethanediy), alpha-(9Z)-9-octadecenyl-omegahydroxy-	Fresh water	0.002 mg/l
	Marine water	0.002 mg/l
	Sewage treatment plant	10 mg/l
	Fresh water sediment	86.9 mg/kg
	Marine sediment	86.9 mg/kg
	Soil	1 mg/kg
naphthalene	Freshwater - intermittent	0.1 mg/l
	Fresh water	0.0024 mg/l
	Marine water	0.0024 mg/l
	Sewage treatment plant	2.9 mg/l
	Fresh water sediment	0.0672 mg/kg
	Marine sediment	0.0672 mg/kg
	Soil	0.0533 mg/kg

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 protection: Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded. Tightly fitting safety goggles. Face-shield. Use eye protection according to EN 166.

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 conditions 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. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

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

Respiratory protection: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. **Suitable respiratory equipment:** Respirator with a particle filter (EN 143). 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.

Filter type: Particulates type (P)

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.

Environmental exposure controls

Water: Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state : clear to slightly turbid

Colour : amber to light brown

Odour : No data available

Odour Threshold : No data available

Melting point/range : No data available

Boiling point/boiling range : No data available

Flammability : No data available

Upper explosion limit / Upper flammability limit: No data available

Lower explosion limit / Lower flammability limit: No data available

Flash point : 101 °C. Method: Pensky-Martens closed cup

Auto-ignition temperature : 365 °C

Decomposition temperature: No data available

pH : 4 - 8. Concentration: 1 % w/v

Viscosity, dynamic : 24.6 mPa.s (40 °C)

70.7 mPa.s (20 °C)

Viscosity, kinematic : \geq 22.0 mm²/s (40 °C)

Water solubility : No data available

Solubility in other solvents : No data available

Partition coefficient: octanol/water: No data available

Vapour pressure : No data available

Density : 0.978 g/cm³ (25 °C)

Relative vapour density : No data available

Particle size : No data available

9.2 Other information

Explosives : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Evaporation rate : No data available

Surface tension : 31.3 mN/m, 20 °C

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): 1,086 mg/kg

Acute inhalation toxicity: LC50 (Rat): > 2.54 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Assessment: The substance/mixture is not toxic on inhalation as defined by dangerous goods regulations.

Acute dermal toxicity: LD50 (Rat, male and female): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal toxicity

Components:

poly(oxy-1,2-ethanediyl), alpha-(9Z)-9-octadecenyl-omega-hydroxy-

Acute oral toxicity: LD50 (Rat): 2,760 mg/kg

benzovindiflupyr (ISO):

Acute oral toxicity: LD50 (Rat, female): 55 mg/kg

Acute toxicity estimate: 100 mg/kg

Method: Converted acute toxicity point estimate

Acute inhalation toxicity: LC50 (Rat, male and female): > 0.56 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Acute dermal toxicity: LD50 (Rat, male and female): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal toxicity

poly(oxy-1,2-ethanediyl), -[2,4,6-tris(1-phenylethyl)phenyl]- -hydroxy-:

Acute oral toxicity: LD50 Oral (Rat): 5,000 mg/kg

naphthalene:

Acute oral toxicity : Assessment: The component/mixture is moderately toxic after single ingestion.

Skin corrosion/irritation	Serious eye damage/eye irritation
<p>Product: Species: Rabbit Result: No skin irritation</p> <p>Components: mixture of octanoic acid- decanoic acid- N,N dimethylamide: Species: Rabbit Result: Irritating to skin.</p> <p>hydrocarbons, C10-C13, aromatics, <1% naphthalene: Result : Repeated exposure may cause skin dryness or cracking.</p> <p>benzovindiflupyr (ISO): Species: Rabbit Result: No skin irritation</p>	<p>Product: Species: Rabbit Result: Irreversible effects on the eye</p> <p>Components: mixture of octanoic acid- decanoic acid- N,N-dimethylamide: Species: Rabbit Result: Risk of serious damage to eyes.</p> <p>poly(oxy-1,2-ethanediyl), alpha-(9Z)-9-octadecenyl-omega-hydroxy-: Result: Risk of serious damage to eyes.</p> <p>benzovindiflupyr (ISO): Species: Rabbit Result: No eye irritation</p>
<p>Respiratory or skin sensitisation</p> <p>Product: Test Type : Local lymph node assay (LLNA) Species : Mouse Result: May cause sensitisation by skin contact.</p> <p>Components: benzovindiflupyr (ISO): Species: Mouse Result: Did not cause sensitisation on laboratory animals.</p>	<p>Germ cell mutagenicity</p> <p>Components: benzovindiflupyr (ISO): Germ cell mutagenicity- Assessment: Animal testing did not show any mutagenic effects.</p> <p>poly(oxy-1,2-ethanediyl), -[2,4,6-tris(1-phenylethyl)phenyl]- -hydroxy-: Germ cell mutagenicity- Assessment: In vitro tests did not show mutagenic effects</p>
<p>Carcinogenicity</p> <p>Components: benzovindiflupyr (ISO): Carcinogenicity - Assessment: Weight of evidence does not support classification as a carcinogen, This substance has been reported to cause tumours in certain animal species., There is no evidence that these findings are relevant to humans.</p> <p>naphthalene: Carcinogenicity - Assessment: Limited evidence of carcinogenicity in animal studies.</p> <p>cellulose, ethyl ether: Carcinogenicity - Assessment: No evidence of carcinogenicity in animal studies.</p>	<p>STOT - single exposure</p> <p>Components: mixture of octanoic acid- decanoic acid- N,N-dimethylamide: Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.</p> <p>benzovindiflupyr (ISO): Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.</p>
<p>Reproductive toxicity</p> <p>Components: benzovindiflupyr (ISO): Reproductive toxicity - Assessment: No toxicity to reproduction</p>	<p>STOT - repeated exposure</p> <p>Components: benzovindiflupyr (ISO): Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.</p>

Repeated dose toxicity	Aspiration toxicity
Components: benzovindiflupyr (ISO): Remarks: No adverse effect has been observed in chronic toxicity tests.	Components: hydrocarbons, C10-C13, aromatics, <1% naphthalene: May be fatal if swallowed and enters airways.

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.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Product:

Toxicity to fish:	LC50 (<i>Oncorhynchus mykiss</i> (rainbow trout)): 0.068 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates:	EC50 (<i>Daphnia magna</i> (Water flea)): 0.27 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants:	ErC50 (<i>Raphidocelis subcapitata</i> (freshwater green alga)): 2.7 mg/l Exposure time: 72 h NOEC (<i>Raphidocelis subcapitata</i> (freshwater green alga)): 0.46 mg/l End point: Growth rate Exposure time: 72 h EC10 (<i>Raphidocelis subcapitata</i> (freshwater green alga)): 1.4 mg/l End point: Growth rate Exposure time: 72 h

Components:

mixture of octanoic acid- decanoic acid- N,N-dimethylamide:

Toxicity to fish:	LC50 : 14.8 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates:	LC50 (<i>Daphnia magna</i> (Water flea)): 7.7 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae/aquatic plants:	ErC50 (<i>Raphidocelis subcapitata</i> (freshwater green alga)): 16.06 mg/l Exposure time: 72 h
hydrocarbons, C10-C13, aromatics, <1% naphthalene:	
Toxicity to fish :	LL50 (<i>Oncorhynchus mykiss</i> (rainbow trout)): 3.6 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates:	EL50 (<i>Daphnia magna</i> (Water flea)): 1.1 mg/l Exposure time: 48 h Remarks: Information given is based on data obtained from similar substances.
Toxicity to algae/aquatic plants:	EL50 (<i>Raphidocelis subcapitata</i> (freshwater green alga)): 7.9 mg/l End point: Growth rate Exposure time: 72 h Remarks: Information given is based on data obtained from similar substances. NOELR (<i>Raphidocelis subcapitata</i> (freshwater green alga)): 0.22 mg/l End point: Growth rate Exposure time: 72 h Remarks: Information given is based on data obtained from similar substances.

Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

benzovindiflupyr (ISO):

Toxicity to fish:	LC50 (<i>Oncorhynchus mykiss</i> (rainbow trout)): 0.0091 mg/l Exposure time: 96 h LC50 (<i>Cyprinus carpio</i> (Carp)): 0.0035 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates:	EC50 (<i>Americamysis bahia</i> (Mysid shrimp)): 0.056 mg/l Exposure time: 96 h
Toxicity to algae/aquatic plants:	ErC50 (<i>Raphidocelis subcapitata</i> (freshwater green alga)): > 0.89 mg/l Exposure time: 96 h NOEC (<i>Raphidocelis subcapitata</i> (freshwater green alga)): 0.42 mg/l End point: Growth rate Exposure time: 96 h ErC50 (<i>Skeletonema costatum</i> (marine diatom)): 0.55 mg/l Exposure time: 72 h NOEC (<i>Skeletonema costatum</i> (marine diatom)): 0.4 mg/l End point: Growth rate Exposure time: 72 h
M-Factor (Acute aquatic toxicity):	100
Toxicity to microorganisms :	EC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h
Toxicity to fish (Chronic toxicity):	NOEC: 0.00095 mg/l Exposure time: 32 d Species: <i>Pimephales promelas</i> (fathead minnow) Test Type: Early-life Stage

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

NOEC: 0.015 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
NOEC: 0.0074 mg/l
Exposure time: 28 d
Species: *Americamysis bahia* (Mysid shrimp)

M-Factor (Chronic aquatic toxicity): 100

poly(oxy-1,2-ethanediyl), -[2,4,6-tris(1-phenylethyl)phenyl]- -hydroxy-:

Toxicity to fish: LC50 (*Danio rerio* (zebra fish)): 21 mg/l
Exposure time: 96 h

Ecotoxicology Assessment

Chronic aquatic toxicity: Harmful to aquatic life with long lasting effects.

naphthalene:**Ecotoxicology Assessment**

Acute aquatic toxicity : Very toxic to aquatic life.

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

12.2 Persistence and degradability**Components:**

mixture of octanoic acid- decanoic acid- N,N-dimethylamide:

Biodegradability: Result: Readily biodegradable.

Stability in water: Remarks: Product is not persistent.

hydrocarbons, C10-C13, aromatics, <1% naphthalene:

Biodegradability : Result: Readily biodegradable.

benzovindiflupyr (ISO):

Biodegradability: Result: Not readily biodegradable.

12.3 Bioaccumulative potential**Components:****benzovindiflupyr (ISO):**

Bioaccumulation: Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water: log Pow: 4.3 (25 °C)

12.4 Mobility in soil

Components:

mixture of octanoic acid- decanoic acid- N,N-dimethylamide:

Stability in soil: Remarks: Product is not persistent.

benzovindiflupyr (ISO):

Distribution among environmental compartments: Remarks: Slightly mobile in soils

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:

benzovindiflupyr (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).

poly(oxy-1,2-ethanediyl), -[2,4,6-tris(1-phenylethyl)phenyl]- -hydroxy-:

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 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

No data available

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. **Waste Code:** uncleaned packagings. 150110, packaging containing residues of or contaminated by dangerous substances

SECTION 14. TRANSPORT INFORMATION

14.1 UN number

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

14.2 UN proper shipping name

ADN: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BENZOVINDIFLUPYR)

ADR: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BENZOVINDIFLUPYR)

RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BENZOVINDIFLUPYR)

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BENZOVINDIFLUPYR)

IATA: Environmentally hazardous substance, liquid, n.o.s. (BENZOVINDIFLUPYR)

14.3 Transport hazard class(es)

ADN	ADR	RID	IMDG	IATA
9	9	9	9	9

14.4 Packing group

ADN	ADR	RID
Packing group: III Classification Code: M6 Hazard Identification Number: 90 Labels: 9	Packing group: III Classification Code: M6 Hazard Identification Number: 90 Labels: 9 Tunnel restriction code: (-)	Packing group: III Classification Code: M6 Hazard Identification Number: 90 Labels: 9

IMDG	IATA (Cargo)	IATA (Passenger)
Packing group: III Labels: 9 EmS Code: F-A, S-F	Packing instruction (cargo aircraft): 964 Packing instruction (LQ): Y964 Packing group: III Labels: Flammable Miscellaneous	Packing instruction (passenger aircraft): 964 Packing instruction (LQ): Y964 Packing group: III Labels: Flammable Miscellaneous

14.5 Environmental hazards

ADN	ADR	RID
Environmentally hazardous: yes	Environmentally hazardous: yes	Environmentally hazardous: yes
IMDG	IATA (Cargo)	IATA (Passenger)
Marine pollutant: yes	Environmentally hazardous: yes	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 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 regulation/legislation specific for the substance or mixture

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII): Conditions of restriction for the following entries should be considered: Number on list 3 xylene

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59): Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer: Not applicable

Regulation (EU) 2019/1021 on persistent organic pollutants (recast): naphthalene

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals: Not applicable

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	Quantity 1	Quantity 2
	100 t	200 t

15.2 Chemical Safety Assessment

A Chemical Safety Assessment is not required for this substance when it is used in the specified applications.

SECTION 16. OTHER INFORMATION

Full text of H-statements	Full text of other abbreviations
H228 : Flammable solid.	Acute Tox. : Acute toxicity
H301 : Toxic if swallowed.	Aquatic Acute : Short-term (acute) aquatic hazard
H302 : Harmful if swallowed.	Aquatic Chronic : Long-term (chronic) aquatic hazard
H304 : May be fatal if swallowed and enters airways.	Asp. Tox. : Aspiration hazard
H315 : Causes skin irritation.	Carc. : Carcinogenicity
H318 : Causes serious eye damage.	Eye Dam. : Serious eye damage
H331 : Toxic if inhaled.	Flam. Sol. : Flammable solids
H335 : May cause respiratory irritation.	Skin Irrit. : Skin irritation
H351 : Suspected of causing cancer.	STOT SE : Specific target organ toxicity - single exposure
H400 : Very toxic to aquatic life.	91/322/EEC : Europe. Commission Directive 91/322/EEC on establishing indicative limit values
H410 : Very toxic to aquatic life with long lasting effects.	GB EH40 BAT : UK. Biological monitoring guidance values
H411 : Toxic to aquatic life with long lasting effects.	91/322/EEC / TWA : Limit Value - eight hours
H412 : Harmful to aquatic life with long lasting effects.	

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; AICS - Australian Inventory of Chemical

Substances; 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; TCSI - Taiwan Chemical Substance 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

Classification of the mixture: **Classification procedure:**

Acute Tox. 4	H302	Based on product data or assessment
Acute Tox. 4	H332	Based on product data or assessment
Eye Dam. 1	H318	Based on product data or assessment
Skin Sens. 1	H317	Based on product data or assessment

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.

Product names are a trademark or registered trademark of a Syngenta Group Company.

CONDITIONS OF USE

FOR USE ONLY AS PROFESSIONAL FUNGICIDE

Crop	Maximum individual dose (litres/hectare/crop)	Maximum no. of treatments (per crop)	Latest time of application
Winter and spring wheat, and triticale.	0.75	1	Up to and including anthesis complete (GS 69).
Winter and spring barley.	0.75	1	Up to and including complete ear emergence (GS 59).

Other Specific Restrictions:

The earliest time of application is GS31.

A maximum of 2 foliar applications of product(s) containing SDHIs can be applied to any cereal crop.

Apply SDHI fungicides always in mixtures.

The mixture partner:

- Should provide satisfactory disease control when used alone on the target disease.
- Must have a different mode of action.

This product must not be applied via hand-held equipment.

ADDITIONAL SAFETY INFORMATION**(a) Operator protection**

WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS), SUITABLE PROTECTIVE GLOVES AND FACE PROTECTION (FACESHIELD) when handling the concentrate.

WASH SPLASHES from skin immediately.

WHEN USING DO NOT EAT, DRINK OR SMOKE.

WASH HANDS AND EXPOSED SKIN before meals and after work.

FOR USE BY TRACTOR MOUNTED/TRAILED SPRAYER ONLY.

(b) Environmental protection

To protect aquatic organisms respect an unsprayed buffer zone of 10m to surface waters.*

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

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.

KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.

EMPTY CONTAINER COMPLETELY and dispose of safely.

* To reduce this buffer zone please refer to PRCD Guidance - STRIPE (Surface water Tool for Reducing the Impact of Pesticides in the Environment).

