

OPTIMUS®

An emulsifiable concentrate formulation containing 175 g/l (17.2% w/w) trinexapac-ethyl.

A growth regulator for reduction of crop height, which can lead to control of lodging and yield protection in winter and spring wheat, winter and spring barley, winter and spring oats, durum wheat, rye, triticale, and ryegrass seed crops.

IMPORTANT INFORMATION FOR PROFESSIONAL USE ONLY AS A PLANT GROWTH REGULATOR

Crop	Maximum Individual Dose (L product/ha)	Maximum Total Dose (L product/ha/crop)	Latest Time of Application*
Winter wheat	0.6	0.6	Before flag leaf sheath extending stage (GS 41)
Spring wheat	0.6	0.6	Before third node detectable (GS 33)
Winter barley	0.9	0.9	Before flag leaf sheath extending stage (GS 41)
Spring barley	0.7	0.7	Before third node detectable (GS 33)
Oats	0.6	0.6	Before second node detectable (GS 29)
Rye, triticale, durum wheat	0.6	0.6	Before third node detectable (GS 33)
Grassland (seed crops)	1.1	1.1	Before second node detectable (GS 32)

Other Specific Restrictions:

This product must not be used on grass seed crops that will be grazed by livestock or cut for fodder.
Treated grassland must not be grazed or cut for fodder.

*See the CROP SPECIFIC INFORMATION section for details of the earliest and latest time of application for each recommendation.

Additional Safety Phrases:

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).

Authorisation Holder & Marketing Company

Nufarm UK Limited
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United Kingdom

Technical Helpline telephone number +44 (0)1274 694714
24-hour emergency telephone number +44 (0)1274 696603

PROTECT FROM FROST

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XXXXXXXXXX

Safety Information

WARNING

Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful to aquatic life with long lasting effects.

Keep out of reach of children.
Wear protective gloves, protective clothing, face protection,
eye protection.

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do so.
Continue rinsing.

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

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

PCS 04704



SPECIMEN -
2019 to date

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Grow a better tomorrow

DIRECTIONS FOR USE

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

GENERAL INFORMATION

OPTIMUS is a growth regulator for crop height reduction, which can lead to control of lodging and yield protection in all varieties of winter and spring wheat, winter and spring barley, winter and spring oats, rye, triticale, durum wheat and ryegrass seed crops.

RESTRICTIONS

- Avoid spray drift onto neighbouring crops.
- Only use on crops at risk of lodging.
- Do not apply if rain or frost is expected or if the crop is wet.
- Do not spray crops under stress or to crops suffering from water logging, pest attack, disease or frost.
- Take particular care to avoid overlapping of sprayed strips.
- Treatment may lead to cereal ears remaining erect through to harvest.

CROP SPECIFIC INFORMATION

WINTER WHEAT

Application Rate: 0.6 L/ha
Maximum Total Dose: 0.6 L/ha
Application Timing: Between tillers erect stage and the flag leaf fully emerged stage (GS 30-39)

SPRING WHEAT

Application Rate: 0.6 L/ha
Maximum Total Dose: 0.6 L/ha
Application Timing: Between tillers erect stage and the second node detectable stage (GS 30-32)

WINTER BARLEY

Application Rate: 0.6 L/ha or 0.9 L/ha
Maximum Total Dose: 0.9 L/ha
Application Timing: **At 0.6 L/ha:** between tillers erect stage and second node detectable stages (GS 30-32)
At 0.9 L/ha: Between flag leaf just visible and flag leaf fully emerged stages (GS 37-39)

SPRING BARLEY

Application Rate: 0.7 L/ha
Maximum Total Dose: 0.7 L/ha
Application Timing: Between tillers erect stage and the second node detectable (GS 30-32)

WINTER AND SPRING OATS

Application Rate: 0.6 L/ha
Maximum Total Dose: 0.6 L/ha
Application Timing: Between tillers erect stage and the first node detectable (GS 30-31)

DURUM WHEAT, RYE AND TRITICALE

Application Rate: 0.6 L/ha
Maximum Total Dose: 0.6 L/ha
Application Timing: Between tillers erect stage and the second node detectable stage (GS 30-32)

RYEGRASS SEED CROPS

Application Rate: 1.1 L/ha
Maximum Total Dose: 1.1 L/ha
Application Timing: Between tillers erect stage and the first node detectable (GS 30-31)

WATER VOLUME

Apply OPTIMUS in 200-300 L/ha water. The higher water volume may be used if the crop is dense and increased penetration of spray is required. Apply as a MEDIUM (BCPC definition) quality spray.

MIXING AND SPRAYING

For use by tractor mounted/trailed sprayers only.
Half fill the spray tank with water and begin agitation. Add the required quantity of OPTIMUS. Add the remainder of the water and continue agitation until spraying is complete.

SPRAY TANK CLEANING

Thoroughly wash all spraying equipment and measuring equipment with water and a wetting agent using an integrated pressure rinsing device or manually rinsing three times immediately after use.

COMPANY ADVISORY INFORMATION

This section is not part of the Product Label under the Plant Protection Products Regulations 2011. It provides additional advice on use of the product.

ACKNOWLEDGMENTS

OPTIMUS is a registered trademark.

CONDITIONS OF SUPPLY

All goods supplied by us are of high grade and we believe them to be suitable but (as we cannot exercise any control over their mixing or use) all conditions and warranties, statutory or otherwise, as to the quality and fitness for any purpose of our goods are excluded, except in so far as such exclusion is prevented by law, and no responsibility will be accepted by us for any damage or injury whatsoever arising from their storage, handling, application or use.

This product is to be used only in accordance with the recommendations and instructions given on the labels provided with this pack. Use in any other circumstances is entirely at users risk.

SAFETY DATA SHEET

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

1.1. Product identifier

CA Code (Nufarm) 3555
Product code Mixture
Trade name Optimus
Type (Nufarm) Country Specific
Country (Nufarm) Ireland

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

1.2.1. Relevant identified uses

Main use category: Professional use
Use of the substance/mixture: Plant growth regulator

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Distributor

Nufarm UK Limited
Wyke Lane
Wyke
BD12 9EJ Bradford - UK
T +44 (0)1274 691234 - F +44 (0)1274691176
info.uk@uk.nufarm.com

1.4. Emergency telephone number:

Emergency number: +44 (0)1274 696603

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation, Category 2 H315
Serious eye damage/eye irritation, Category 2 H319
Skin sensitisation, Category 1 H317
Hazardous to the aquatic environment —
Chronic Hazard, Category 3 H412

Full text of hazard classes and H-statements: see section 16

Adverse physicochemical, human health and environmental effects

Causes skin and eye irritation. May cause an allergic skin reaction. Harmful to aquatic life with long lasting effects.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS07

Signal word (CLP):

Hazardous ingredients:

Hazard statements (CLP):

Precautionary statements (CLP):

H-statements:

P-Phrases:

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII.

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Poly(oxy-1,2-ethanediyl), alpha-isotridecyl-omega-hydroxy-	(CAS-No.) 9043-30-5 (EC-No.) 500-027-2	16-20	Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318
Cyclohexanecarboxylic acid, 4-(cyclopropylhydroxymethylene)-3,5-dioxo-, ethyl ester	(CAS-No.) 95266-40-3	15-19	Aquatic Chronic 2, H411
propylene carbonate	(CAS-No.) 108-32-7 (EC-No.) 203-572-1 (EC Index-No.) 607-194-00-1 (REACH-no) 01-2119537232-48	7-12	Eye Irrit. 2, H319
Dodecylbenzene Sulphonic acid-Isopropylamine salt	(CAS-No.) 84961-74-0 (EC-No.) 284-664-9 (REACH-no) 01-2119985163-33	9-12	Skin Irrit. 2, H315 Eye Irrit. 2, H319

Full text of H-statements: see section 16.

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4. FIRST AID MEASURES

4.1. Description of first aid measures

First-aid measures general:

Call a physician immediately. See material safety data sheet.

First-aid measures after inhalation:

Remove person to fresh air and keep comfortable for breathing. Give oxygen or artificial respiration if necessary. Call a POISON CENTER/doctor.

First-aid measures after skin contact:

After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water. Gently wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.

First-aid measures after eye contact:

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion:

Call a physician immediately. Rinse mouth out with water. Drink plenty of water.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after skin contact: Irritation.

Symptoms/effects after eye contact: Eye irritation.

Symptoms/effects after ingestion: Risk of lung oedema.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Water spray. Dry powder. Foam. Carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire: Toxic fumes may be released.

5.3. Advice for firefighters

Protection during firefighting: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures: Ventilate spillage area. Avoid contact with skin and eyes. Evacuate unnecessary personnel. Keep upwind.

6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and materials for containment and cleaning up

For containment: Collect spillage.

Methods for cleaning up: Take up liquid spill into absorbent material.

Other information: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Precautions for safe handling: Ensure good ventilation of the work station. Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe dust, fume, gas, mist, spray, vapours.

Hygiene measures: Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store locked up. Store in a well-ventilated place. Keep cool.

Information on mixed storage: Keep away from food, drink and animal feeding stuffs. Keep out of the reach of children.

Special rules on packaging: Keep only in original container. Store in a closed container.

7.3. Specific end uses

Plant growth regulator.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

Personal protective equipment:

Gloves. Protective clothing. Protective goggles.

Materials for protective clothing:

Impermeable clothing

Hand protection:

Impermeable protective gloves. Nitrile rubber gloves. Butyl rubber gloves

Eye protection:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Chemical goggles or safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment



Environmental exposure controls:

Avoid release to the environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state:	Liquid
Colour:	Yellow, brown, characteristic.
Odour:	characteristic.
Odour threshold:	No data available
pH:	No data available
pH solution concentration:	1% 3,2-4,2; CIPAC MT75.3
Relative evaporation rate (butylacetate=1):	No data available
Melting point:	Not applicable
Freezing point:	No data available
Boiling point:	No data available
Flash point:	137 °C CIPAC MT12
Auto-ignition temperature:	374 °C EEC A.15
Decomposition temperature:	No data available
Flammability (solid, gas):	Not applicable
Vapour pressure:	No data available
Relative vapour density at 20 °C:	0.96 - 1.06 CIPAC MT 3.1
Relative density:	No data available
Solubility:	No data available
Log Pow:	No data available
Viscosity, kinematic:	24.7 mm ² /s (40°C)
Viscosity, dynamic:	No data available
Explosive properties:	Product is not explosive.
Oxidising properties:	Non oxidizing material according to EC criteria
Explosive limits:	No data available

9.2. Other information

No additional information available

10. STABILITY AND REACTIVITY

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7). Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5. Incompatible materials

No additional information available.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Optimus	
LD50 oral rat	> 2000 mg/kg (OECD 423 method)
LD50 dermal rat	> 2000 mg/kg (OECD 402 method)

Cyclohexanecarboxylic acid, 4-(cyclopropylhydroxymethylene)-3,5-dioxo-, ethyl ester (95266-40-3)

LD50 oral rat	4460 mg/kg
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Poly(oxy-1,2-ethanediyl), .alpha.-isotridecyl-.omega.-hydroxy- (9043-30-5)

LD50 oral rat	1000 mg/kg
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Acute toxicity (oral): Not classified.

Acute toxicity (dermal): Not classified.

Acute toxicity (inhalation): Not classified

Skin corrosion/irritants: Causes skin irritation.

Serious eye damage/irritation: Causes serious eye irritation.

Optimus	
Viscosity, kinematic	24.7 mm ² /s (40°C)

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - general: Very toxic to aquatic life with long lasting effects.

Acute aquatic toxicity: Not classified.

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

Optimus	
LC50 96h fish	24 mg/l <i>Oncorhynchus mykiss</i> OECD 203
EC50 48h crustacea	15 mg/l (OECD 202 method)
EC50 72h algae	93 mg/l <i>Anabaena flos-aquae</i> ; OECD 201
ErC50 (algae)	78 mg/l <i>Lemna gibba</i> ; 7d; OECD 221

Cyclohexanecarboxylic acid, 4-(cyclopropylhydroxymethylene)-3,5-dioxo-, ethyl ester (95266-40-3)

Additional Ecotox information	
Birds LD50 Oral (mallard duck) >2000 mg/Kg	
Bees LD50 Oral >83 ug/bee	

12.2. Persistence and degradability

Optimus	
Persistence and degradability	Not readily biodegradable.
Cyclohexanecarboxylic acid, 4-(cyclopropylhydroxymethylene)-3,5-dioxo-, ethyl ester (95266-40-3)	
Persistence and degradability	Not readily biodegradable.
Biodegradation	DT50 4.2d (water); 1d (soil)

12.3. Bioaccumulation potential

Cyclohexanecarboxylic acid, 4-(cyclopropylhydroxymethylene)-3,5-dioxo-, ethyl ester (95266-40-3)	
Bioconcentration factor (BCF REACH)	6
Log Pow	-0.27 OECD 107, 117; pH7

12.4. Mobility in soil

No additional information available.

12.5. Results of PBT and vPvB assessment

Optimus	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	
Component	
Cyclohexanecarboxylic acid, 4-(cyclopropylhydroxymethylene)-3,5-dioxo-, ethyl ester (95266-40-3)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

No additional information available

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste treatment methods: Dispose of contents/container in accordance with licensed contractor's sorting instructions.
European List of Waste (LoW) code: 02 01 08* - agrochemical waste containing dangerous substances.

14. TRANSPORT INFORMATION

In accordance with ADR / RID / IMDG / IATA / ADN.

14.1. UN number

Not regulated.

14.2. Proper shipping name

Not regulated.

14.3. Transport hazard class(es)

Not regulated.

14.4. Packaging group

Not regulated.

14.5. Environmental hazards

Not regulated. No supplementary information available.

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

15. REGULATORY INFORMATION

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

15.1.1. EU-Regulations

Contains no REACH substances with Annex XVII restrictions

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

15.1.2. National regulations

No additional information available

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out

16. OTHER INFORMATION

Full text of H- and EUH-statements:

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic Hazard, Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment — Chronic Hazard, Category 3
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Skin Irrit. 2	Specific target organ toxicity — Repeated exposure, Category 2
Skin Sens. 1	Skin sensitisation, Category 1
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.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
EUH401	To avoid risks to human health and the environment, comply with the instructions for use.