SAFETY PRECAUTIONS

Operator protection:
Engineering control of operator exposure must be used where reasonably practicable in addition to the following personal protective equipment:

a) Operators must wear suitable protective clothing (coveralls) and suitable protective gloves when handling the concentrate.
b) Operators must wear suitable protective gloves when handling contaminated surfaces.

However, engineering controls may replace personal protective equipment if a COSHH assessment shows that they provide an equal or higher standard of protection.
WASH ALL PROTECTIVE CLOTHING thoroughly after use, especially the insides of gloves.
WHEN USING DO NOT EAT, DRINK OR SMOKE.
WASH CONCENTRATE from skin or eyes immediately.
DO NOT BREATHE SPRAY.
WASH HANDS AND EXPOSED SKIN before meals and after work.

Consumer protection:
NOT TO BE USED ON FOOD CROPS.

Environmental protection:
KEEP LIVESTOCK out of treated areas for at least 7 days following treatment and until foliage of any poisonous weeds such as ragwort has died and become unpalatable.
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.
To protect aquatic organisms respect an unsprayed buffer zone to surface water bodies in line with the LERAP requirement.

LERAP B

DO NOT ALLOW DIRECT SPRAY from horizontal boom sprayers to fall within 5 metres of the top of the bank of a static or flowing water body, unless a Local Environment Risk Assessment for Pesticides (LERAP) permits a narrower buffer zone, or within 1 metre of the top of a ditch which is dry at the time of application. Aim spray away from water.
This product qualifies for inclusion within the Local Environment Risk Assessment for Pesticides (LERAP) scheme. Before each spraying operation from a horizontal boom sprayer, either a LERAP must be carried out in accordance with HSE's published guidance or the statutory buffer zone must be maintained. The results of the LERAP must be recorded and kept available for three years.
(LERAP Scheme not applicable in the Republic of Ireland).
Extreme care must be taken to avoid spray drift onto non-crop plants outside of the target area.

Storage and disposal:
KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.
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.
DO NOT RE-USE CONTAINER for any purpose.

Dow AgroSciences

H

Doxstar™ PRO

HERBICIDE

Product Registration Number: MAPP 15664

An emulsifiable concentrate containing 150 g ae/litre (14.68% w/w) fluroxypyr (present as 216 g/litre of fluroxypyr-meptyl) and 150 g ae/litre (14.68% w/w) triclopyr (present as 209 g/litre triclopyr butoyl).

A foliar acting herbicide for the control of DOCKS in ESTABLISHED GRASSLAND.

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

READ DIRECTIONS FOR USE ON ATTACHED LEAFLET.

PROTECT FROM FROST.

2 Litres e

Dow AgroSciences Limited
Latchmore Court, Brand Street, Hitchin, Hertfordshire. SG5 1NH.
Telephone: Hitchin (01462) 457272 Fax: (01462) 426605
24 Hour Emergency Telephone Number: +44 (0) 1553 761 251

This label is compliant with the CPA Voluntary Initiative Guidance.

The Voluntary Initiative

IRRITANT

DANGEROUS FOR THE ENVIRONMENT

MAY CAUSE SENSITISATION BY SKIN CONTACT.
VERY TOXIC TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT.
WEAR SUITABLE GLOVES.
AVOID CONTACT WITH SKIN.
KEEP OUT OF REACH OF CHILDREN.
KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDING STUFFS.
IF SWALLOWED SEEK MEDICAL ADVICE IMMEDIATELY AND SHOW THIS CONTAINER OR LABEL.
THIS MATERIAL AND ITS CONTAINER MUST BE DISPOSED OF IN A SAFE WAY.
USE APPROPRIATE CONTAINMENT TO AVOID ENVIRONMENTAL CONTAMINATION.
To avoid risks to man and the environment, comply with the instructions for use.

9 UKE 0912 DOX A

IMPORTANT INFORMATION.

FOR USE ONLY AS A HERBICIDE

Crop/Situation:	Grassland
Maximum Individual Dose:	2.0 litres product per hectare
Maximum Total Dose:	2.0 litres product/hectare/annum
Latest Time of Application:	7 days before grazing or harvest

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

P00362401

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.

NOTES

Grass and weeds must be actively growing to ensure good weed control and minimal check to the grass.

Do not spray in drought, very hot or very cold weather.

Control may be reduced if rain falls within 2 hours of application.

Do not roll or harrow grass for 10 days before or 7 days after application.

Clover will be killed or severely checked by application of DOXSTAR PRO.

DO NOT sow kale, swedes, turnips or grass mixtures containing clover by direct drilling or minimum cultivation techniques within 6 weeks of applying DOXSTAR PRO.

DOXSTAR PRO is safe to established grassland. Very occasionally some yellowing of the sward may occur; this is transient and quickly outgrown.

Occasionally, e.g. in hot conditions, vapour drift may occur, making it particularly important to assess the risk to neighbouring vegetation.

Take care to avoid drift onto susceptible crops, non-target plants or waterways. Do not apply directly to, or allow spray drift to come into contact with agricultural or horticultural crops, amenity plantings, gardens, ponds, lakes or watercourses.

Wash out spray equipment thoroughly with water and detergent immediately after use. Traces of DOXSTAR PRO could cause harm to susceptible crops sprayed later.

DO NOT use on crops intended for seed production.

Grazing Interval

Exclude livestock during treatment and do not allow livestock to graze treated grassland for at least 7 days following treatment, and until foliage of any poisonous weeds which may have been affected by application has died and become unpalatable.

GENERAL INFORMATION

DOXSTAR PRO is a foliar acting herbicide for the control of broad-leaved dock and curled dock in established grassland.

ESTABLISHED GRASSLAND

WEEDS CONTROLLED

DOXSTAR PRO is recommended for the control of broad-leaved dock and curled dock, in the rosette stage up to 200 mm high or across.

RATE OF USE AND TIMING

Apply DOXSTAR PRO at 2.0 litres/ha in 300 to 400 litres of water as an overall treatment in the autumn or spring for the control of docks.

Use the higher volume of water where the weeds are large at the time of application and where the grass is dense.

Application timing of DOXSTAR PRO is crucial for good control and must be made when the weeds and grass are actively growing to ensure good weed control and minimal check to the grass. Docks should be treated in the rosette stage and within the size given above.

It is important that there is sufficient leaf area for uptake of the herbicide. This is particularly true on well-established docks which will have an extensive tap root, but which early in the spring or soon after cutting may only have a few small leaves.

If the grass (and hence the weeds) has been cut for conservation hay or silage, or has been grazed, leave for 2 to 3 weeks to allow sufficient re-growth to occur before spraying.

To allow maximum translocation of DOXSTAR PRO to the roots do not cut grass for 28 days after application.

On large well-established docks and where there is a large reservoir of seed in the soil a further control programme in the following year may be required.

MIXING

Fill the spray tank half full with water and add the required amount of DOXSTAR PRO. Continue filling with water and maintain agitation during filling, while spraying and during any stoppages. Mix up only sufficient spray volume for the area to be treated and use the spray immediately.

SPRAY QUALITY

Apply DOXSTAR PRO as a MEDIUM spray as defined by the BCPC system.

SAFETY DATA SHEET

This Safety Data sheet does not form part of the approved label.

Section 1. Identification of the substance/preparation and of the company/undertaking

1.1 Product identifiers
Product Name

DOXSTAR PRO Herbicide

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses
Plant Protection Product

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION
Dow AgroSciences Limited
A Subsidiary of The Dow Chemical Company
Latchmore Court, Brand Street
SG5 1NH Hitchin
United Kingdom

SDSQuestion@dow.com

1.4 EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 00 31 115 694 982
Local Emergency Contact: 00 31 115 694 982

Section 2. Hazards Identification

2.1 Classification of the substance or mixture

Classification according to EU Directives 67/548/EEC or 1999/45/EC

	R43	May cause sensitisation by skin contact.
N	R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling according to EC Directives
Hazard Symbol:
Xi - Irritant.
N - Dangerous for the environment.
Risk Phrases :
R43 - May cause sensitisation by skin contact.
R50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety Phrases :
S2 - Keep out of the reach of children.
S13 - Keep away from food, drink and animal feeding stuffs.
S24 - Avoid contact with skin.
S35 - This material and its container must be disposed of in a safe way.
S37 - Wear suitable gloves.
S46 - If swallowed, seek medical advice immediately and show this container or label.
S57 - Use appropriate containment to avoid environmental contamination.

To avoid risks to man and the environment, comply with the instructions for use.
2.3 Other Hazards
No information available.

Section 3. Composition/information on ingredients

3.2 Mixture
This product is a mixture.

CAS-No. / EC-No. / Index	REACH No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 81406-37-3 **EC-No.** 279-752-9 **Index** 607-272-00-5	—	21.0 %	Fluroxypyr-meptyl	Aquatic Acute, 1, H400 Aquatic Chronic, 1, H410
CAS-No. 64700-56-7 **EC-No.** 265-024-8	—	19.7 %	Triclopyr-2-butoxyethyl ester	Acute Tox., 4, H302 Skin Sens., 1, H317 Aquatic Acute, 1, H400 Aquatic Chronic, 1, H410
CAS-No. 112-39-0 **EC-No.** 203-966-3	—	< 10.0 %	Methyl palmitate	Not classified
CAS-No. 26264-06-2 **EC-No.** 247-557-8	—	< 5.0 %	Benzenesulfonic acid, dodecyl-, calcium salt	Skin cor/irr, 2, H315 Eye cor/irr, 1, H318
CAS-No. 112-61-8 **EC-No.** 203-990-4	—	< 5.0 %	Methyl Stearate	Not classified
CAS-No. 78-83-1 **EC-No.** 201-148-0 **Index** 603-108-00-1	—	< 5.0 %	2-Methylpropan-1-ol; iso-butanol	Flam. Liq., 3, H226 STOT SE, 3, H335 Skin cor/irr, 2, H315 Eye Dam., 1, H318 STOT SE, 3, H336

CAS-No. / EC-No. / Index	Amount	Component	Classification: 67/548/EEC
CAS-No. 81406-37-3 **EC-No.** 279-752-9 **Index** 607-272-00-5	21.0 %	Fluroxypyr-meptyl	N: R50, R53
CAS-No. 64700-56-7 **EC-No.** 265-024-8	19.7 %	Triclopyr-2-butoxyethyl ester	Xn: R22; R43; N: R50/53
CAS-No. 112-39-0 **EC-No.** 203-966-3	< 10.0 %	Methyl palmitate	Xi: R36/38
CAS-No. 26264-06-2 **EC-No.** 247-557-8	< 5.0 %	Benzenesulfonic acid, dodecyl-, calcium salt	Xi: R38, R41
CAS-No. 112-61-8 **EC-No.** 203-990-4	< 5.0 %	Methyl Stearate	Xi: R36/38
CAS-No. 78-83-1 **EC-No.** 201-148-0 **Index** 603-108-00-1	< 5.0 %	2-Methylpropan-1-ol; iso-butanol	R10; Xi: R37/38, R41; R67

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

Section 4. First-aid measures

4.1 Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control centre or doctor for treatment advice.
Skin Contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control centre or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

Eye Contact: Hold eyes 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 eyes. Call a poison control centre or doctor for treatment advice.
Ingestion: Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control centre or doctor. Never give anything by mouth to an unconscious person.
4.2 Most important symptoms and effects, both acute and delayed
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.
4.3 Indication of immediate medical attention and special treatment needed
No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control centre or doctor, or going for treatment.
Skin contact may aggravate pre-existing dermatitis.

Section 5. Fire Fighting Measures

5.1 Extinguishing Media
Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
5.2 Special hazards arising from the substance or mixture
Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide. Combustion products may include trace amounts of: Phosgene.
Unusual Fire and Explosion Hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.
5.3 Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. No smoking in area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to Section 7, Handling, for additional precautionary measures.
6.2 Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.
6.3 Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

Section 7. Handling and Storage

7.1 Precautions for safe handling
Handling
General Handling: Keep out of reach of children. Do not swallow. Avoid breathing vapour or mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling. Keep away from heat, sparks and flame. Containers, even those that have been emptied, can contain vapours. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
7.2 Conditions for safe storage, including any incompatibilities
Storage
Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, food stuffs, drugs or potable water supplies.
7.3 Specific end uses
Refer to product label.

Section 8. Exposure Controls / Personal Protection

8.1 Control parameters
Exposure Limits

Component	List	Type	Value
Triclopyr-2-butoxyethyl ester	Dow IHG	TWA	2 mg/m3 D-SEN
Fluroxypyr-meptyl	Dow IHG	TWA	10 mg/m3
2-Methylpropan-1-ol; iso-butanol	ACGIH	TWA	50 ppm
	UK WEL	TWA	154 mg/m3 50 ppm
	UK WEL	STEL	231 mg/m3 75 ppm
	Ireland OELV	TWA	150 mg/m3 50 ppm
	Ireland OELV	STEL	225 mg/m3 75 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.
A D-SEN notation following the exposure guideline refers to the potential to produce dermal sensitization, as confirmed by human or animal data.

8.2 Exposure controls
Personal Protection
Eye/Face Protection: Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent.
Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.
Hand protection: Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. Use the following CE approved air-purifying respirator: Organic vapour cartridge with a particulate pre-filter, type AP2.
Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.
Engineering Controls
Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Section 9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical State	Liquid.
Colour	Yellow
Odour	Mild
pH	5.15 (@ 1 %)

Melting Point	No test data available
Freezing Point	No test data available
Boiling Point (760 mmHg)	No test data available.
Flash Point - Closed Cup	85 °C *ASTM D93*
Flammable Limits In Air	**Lower**: No test data available **Upper**: No test data available
Vapour Pressure	No test data available
Vapour Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	No test data available
Solubility in water (by weight)	Emulsion
Partition coefficient, n-octanol/water (log Pow)	No data available for this product.
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Dynamic Viscosity	20.5 mPa.s @ 20 °C *OECD 114*
Explosive properties	No *Thermal*
Oxidizing properties	No

9.2 Other information

Liquid Density	1.02 g/cm3 @ 20 °C

Section 10. Stability and Reactivity

10.1 Reactivity
No dangerous reaction known under conditions of normal use.
10.2 Chemical stability
Thermally stable at typical use temperatures.
10.3 Possibility of hazardous reactions
Polymerization will not occur.
10.4 Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose.
10.5 Incompatible Materials: Avoid contact with: Acids. Bases. Oxidizers.
10.6 Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen chloride. Nitrogen oxides. Toxic gases are released during decomposition. Decomposition products can include trace amounts of: Phosgene.

Section 11. Toxicological Information

11.1 Information on toxicological effects
Acute Toxicity
Ingestion
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in gastrointestinal irritation.
As product: LD50, rat 3,899 mg/kg
Aspiration hazard
Based on physical properties, not likely to be an aspiration hazard.
Dermal
Prolonged skin contact is unlikely to result in absorption of harmful amounts.
As product: LD50, rat > 5,000 mg/kg
No deaths occurred at this concentration.
Inhalation
Prolonged exposure is not expected to cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).
As product: The LC50 has not been determined.
Eye damage/eye irritation
May cause slight eye irritation. Corneal injury is unlikely.
Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness. May cause drying and flaking of the skin.
Sensitisation
Skin
Has demonstrated the potential for contact allergy in mice.
Respiratory
No relevant data found.
Repeated Dose Toxicity
For the active ingredient(s): Triclopyr butoxyethyl ester. In animals, effects have been reported on the following organs: Kidney. Liver. Contains component(s) which have been reported to cause effects on the following organs in animals: Central nervous system.
Chronic Toxicity and Carcinogenicity
No relevant data found.
Developmental Toxicity
For the active ingredient(s): Has been toxic to the foetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.
Reproductive Toxicity
For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. For the active ingredient(s): Fluroxypyr 1-methylheptyl ester. In animal studies, did not interfere with reproduction.
Genetic Toxicology
For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative. For the minor component(s): In vitro genetic toxicity studies were predominantly negative.

Component Toxicology - Fluroxypyr 1-methylheptyl ester

Inhalation	LC50, 4 h, Dust, rat > 1 mg/l
Inhalation	Maximum attainable concentration. No deaths occurred at this concentration.

Component Toxicology - Triclopyr-2-butoxyethyl ester

Inhalation	LC50, 4 h, Other, rat > 4.8 mg/l
Inhalation	Maximum attainable concentration.

Component Toxicology - Benzenesulfonic acid, dodecyl-, calcium salt

Inhalation	The LC50 has not been determined. Estimated. LC50, Aerosol, rat > 2 mg/l

Component Toxicology - Isobutanol

Inhalation	LC50, 4 h, Vapour, rat, male and female > 8,000 ppm
Inhalation	LC50, 6 h, Vapour, rat, male and female > 28.2 mg/l

Section 12. Ecological Information

12.1 Toxicity
Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).
Fish Acute & Prolonged Toxicity
LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 h: 4.48 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, Daphnia magna (Water flea), semi-static test, 48 h, immobilization: 32 mg/l
Aquatic Plant Toxicity
ErC50, diatom Navicula sp., static test, Growth rate inhibition, 72 h: 0.854 mg/l
Toxicity to Above Ground Organisms
oral LD50, Apis mellifera (bees): > 217.4 micrograms/bee
contact LD50, Apis mellifera (bees): > 200 micrograms/bee
Toxicity to Soil Dwelling Organisms
LC50, Eisenia fetida (earthworms), 14 d: > 2,000 mg/kg

12.2 Persistence and Degradability

Data for Component: **Fluroxypyr-meptyl**
Material is not readily biodegradable according to OECD/EEC guidelines.
Stability in Water (1/2-life):
454 d
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
32 %	28 d	OECD 301D Test	fail

Theoretical Oxygen Demand: 2.2 mg/mg

Data for Component: **Triclopyr-2-butoxyethyl ester**
Chemical degradation (hydrolysis) is expected in the environment. Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
Stability in Water (1/2-life):
12 h; 25 °C; pH 6.7
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
18 %	28 d	OECD 301B Test	pass

Data for Component: **Methyl palmitate**
No relevant information found.
Data for Component: **Benzenesulfonic acid, dodecyl-, calcium salt**
No relevant data found.

OECD Biodegradation Tests: For similar material(s):

Biodegradation	Exposure Time	Method	10 Day Window
95 %	28 d	OECD 301E Test	pass

Data for Component: **Methyl Stearate**
No relevant information found.
Data for Component: **2-Methylpropan-1-ol; iso-butanol**
Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
70 - 80 %	28 d	OECD 301D Test	pass
90 %	14 d	OECD 301C Test	Not applicable

Theoretical Oxygen Demand: 2.59 mg/mg

12.3 Bioaccumulative potential

Data for Component: **Fluroxypyr-meptyl**
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 5.04 Measured
Bioconcentration Factor (BCF): 26; Oncorhynchus mykiss (rainbow trout); Measured
Data for Component: **Triclopyr-2-butoxyethyl ester**
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient, n-octanol/water (log Pow): 4.09 - 4.49 Measured
Data for Component: **Methyl palmitate**
Data for Component: **Benzenesulfonic acid, dodecyl-, calcium salt**
Bioaccumulation: No relevant data found.
Data for Component: **Methyl Stearate**
Bioaccumulation: No relevant data found.
Data for Component: **2-Methylpropan-1-ol; iso-butanol**
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 0.76 Measured
Bioconcentration Factor (BCF): 2; Estimated.

12.4 Mobility in soil

Data for Component: **Fluroxypyr-meptyl**
Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient, soil organic carbon/water (Koc): 6,200 - 43,000**Henry's Law Constant (H):** 5.5E+00 Pa*m3/mole. Measured
Data for Component: **Triclopyr-2-butoxyethyl ester**
Mobility in soil: No relevant data found.
Data for Component: **Methyl palmitate**
Data for Component: **Benzenesulfonic acid, dodecyl-, calcium salt**
Mobility in soil: No relevant data found.
Data for Component: **Methyl Stearate**
Mobility in soil: No data available.
Data for Component: **2-Methylpropan-1-ol; iso-butanol**
Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 2 Estimated.
Henry's Law Constant (H): 9.78E-06 atm*m3/mole; 25 °C Measured
Distribution in Environment: Mackay Level 1 Fugacity Model:

Air	Water.	Biota	Soil	Sediment
32.02 %	67.92 %	0 %	0.03 %	0.03 %

12.5 Results of PBT and vPvB assessment

Data for Component: **Fluroxypyr-meptyl**
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).
Data for Component: **Triclopyr-2-butoxyethyl ester**
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).
Data for Component: **Methyl palmitate**
This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).
Data for Component: **Benzenesulfonic acid, dodecyl-, calcium salt**
This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).
Data for Component: **Methyl Stearate**
This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).
Data for Component: **2-Methylpropan-1-ol; iso-butanol**
This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

Data for Component: **Fluroxypyr-meptyl**
This substance is not in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.
Data for Component: **Triclopyr-2-butoxyethyl ester**
This substance is not in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.
Data for Component: **Benzenesulfonic acid, dodecyl-, calcium salt**
This substance is not in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.
Data for Component: **Methyl Stearate**
This substance is not in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.
Data for Component: **2-Methylpropan-1-ol; iso-butanol**
This substance is not in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.

Section 13. Disposal Considerations

13.1 Waste treatment methods
If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

Section 14. Transport Information

ROAD & RAIL
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name: Triclopyr and Fluroxypyr
Hazard Class: CLASS 9 **ID Number:** UN3082 **Packing Group:** PG III
Classification: M6
Hazard identification No: 90
Tremcard Number: 90GM6-III
Environmental Hazard: Yes

OCEAN
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name: Triclopyr and Fluroxypyr
Hazard Class: CLASS 9 **ID Number:** UN3082 **Packing Group:** PG III
EMS Number: F-A,S-F
Marine pollutant.: Yes

AIR
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name: Triclopyr and Fluroxypyr
Hazard Class: CLASS 9 **ID Number:** UN3082 **Packing Group:** PG III
Cargo Packing Instruction: 964
Passenger Packing Instruction: 964
Environmental Hazard: Yes

INLAND WATERWAYS
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name: Triclopyr and Fluroxypyr
Hazard Class: CLASS 9 **ID Number:** UN3082 **Packing Group:** PG III
Classification: M6
Hazard identification No: 90
Tremcard Number: 90GM6-III
Environmental Hazard: Yes

Section 15. Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
European Inventory of Existing Commercial Chemical Substances (EINECS)
The components of this product are on the EINECS inventory or are exempt from inventory requirements.

Product Registration Number: MAPP 15664/ PCS No. 04202

15.2 Chemical Safety Assessment
For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

Section 16. Other Information

Hazard statement in the composition section

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Risk-phrases in the Composition section

R10	Flammable.
R22	Harmful if swallowed.
R36/38	Irritating to eyes and skin.
R37/38	Irritating to respiratory system and skin.
R38	Irritating to skin.
R41	Risk of serious damage to eyes.
R43	May cause sensitisation by skin contact.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R67	Vapours may cause drowsiness and dizziness.

Revision
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DAS Code: GF-2044
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Dow AgroSciences Limited urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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SAFETY PRECAUTIONS

Operator protection:
Engineering control of operator exposure must be used where reasonably practicable in addition to the following personal protective equipment:

a) Operators must wear suitable protective clothing (coveralls) and suitable protective gloves when handling the concentrate.
b) Operators must wear suitable protective gloves when handling contaminated surfaces.

However, engineering controls may replace personal protective equipment if a COSHH assessment shows that they provide an equal or higher standard of protection.
WASH ALL PROTECTIVE CLOTHING thoroughly after use, especially the insides of gloves.
WHEN USING DO NOT EAT, DRINK OR SMOKE.
WASH CONCENTRATE from skin or eyes immediately.
DO NOT BREATHE SPRAY.
WASH HANDS AND EXPOSED SKIN before meals and after work.

Consumer protection:
NOT TO BE USED ON FOOD CROPS.

Environmental protection:
KEEP LIVESTOCK out of treated areas for at least 7 days following treatment and until foliage of any poisonous weeds such as ragwort has died and become unpalatable.
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.
To protect aquatic organisms respect an unsprayed buffer zone to surface water bodies in line with the LERAP requirement.

LERAP B

DO NOT ALLOW DIRECT SPRAY from horizontal boom sprayers to fall within 5 metres of the top of the bank of a static or flowing water body, unless a Local Environment Risk Assessment for Pesticides (LERAP) permits a narrower buffer zone, or within 1 metre of the top of a ditch which is dry at the time of application. Aim spray away from water.
This product qualifies for inclusion within the Local Environment Risk Assessment for Pesticides (LERAP) scheme. Before each spraying operation from a horizontal boom sprayer, either a LERAP must be carried out in accordance with HSE's published guidance or the statutory buffer zone must be maintained. The results of the LERAP must be recorded and kept available for three years.
(LERAP Scheme not applicable in the Republic of Ireland).
Extreme care must be taken to avoid spray drift onto non-crop plants outside of the target area.

Storage and disposal:
KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.
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.
DO NOT RE-USE CONTAINER for any purpose.

Dow AgroSciences

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Doxstar™ PRO

HERBICIDE

Product Registration Number: MAPP 15664

An emulsifiable concentrate containing 150 g ae/litre (14.68% w/w) fluroxypyr (present as 216 g/litre of fluroxypyr-meptyl) and 150 g ae/litre (14.68% w/w) triclopyr (present as 209 g/litre triclopyr butoyl).

A foliar acting herbicide for the control of DOCKS in ESTABLISHED GRASSLAND.

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

READ DIRECTIONS FOR USE ON ATTACHED LEAFLET.

PROTECT FROM FROST.

2 Litres e

Dow AgroSciences Limited
Latchmore Court, Brand Street, Hitchin, Hertfordshire. SG5 1NH.
Telephone: Hitchin (01462) 457272 Fax: (01462) 426605
24 Hour Emergency Telephone Number: +44 (0) 1553 761 251

This label is compliant with the CPA Voluntary Initiative Guidance.

The Voluntary Initiative

IRRITANT

DANGEROUS FOR THE ENVIRONMENT

MAY CAUSE SENSITISATION BY SKIN CONTACT.
VERY TOXIC TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT.
WEAR SUITABLE GLOVES.
AVOID CONTACT WITH SKIN.
KEEP OUT OF REACH OF CHILDREN.
KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDING STUFFS.
IF SWALLOWED SEEK MEDICAL ADVICE IMMEDIATELY AND SHOW THIS CONTAINER OR LABEL.
THIS MATERIAL AND ITS CONTAINER MUST BE DISPOSED OF IN A SAFE WAY.
USE APPROPRIATE CONTAINMENT TO AVOID ENVIRONMENTAL CONTAMINATION.
To avoid risks to man and the environment, comply with the instructions for use.

9 UKE 0912 DOX A

IMPORTANT INFORMATION.

FOR USE ONLY AS A HERBICIDE

Crop/Situation:	Grassland
Maximum Individual Dose:	2.0 litres product per hectare
Maximum Total Dose:	2.0 litres product/hectare/annum
Latest Time of Application:	7 days before grazing or harvest

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