Defy®

syngenta®

GROUP 15 HERBICIDE

Contains 800 grams per litre prosulfocarb as an emulsifiable concentrate formulation.
For the control of annual grass weeds and annual broad-leaved weeds in Winter Barley, Winter Wheat and Early and Maincrop Potatoes.

FOR PROFESSIONAL USE ONLY

To avoid risks to human health and the environment,comply with the instructions for use.
Danger
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Very toxic to aquatic life with long lasting effects.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Collect spillage.
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 of as non-hazardous waste.

PCS No. 04277 **UFI:** RDC3-T007-900M-ECF2

Approval Holder	Irish Marketing Company
Syngenta UK Ltd 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

PROTECT FROM FROST
SHAKE WELL BEFORE USE

L1119329 IREL/05C PPE 4207957

10 litres

SAFETY PRECAUTIONS
(a) Operator Protection

WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS), SUITABLE PROTECTIVE GLOVES when handling the concentrate and handling contaminated surfaces.

WASH CONCENTRATE from skin or eyes immediately.
WASH HANDS AND EXPOSED SKIN before eating and after work.
WASH ALL PROTECTIVE CLOTHING throughly after use, especially the insides of gloves.

(b) Environmental Protection
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 of 5m to surface water bodies.

(c) Storage and disposal
KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.
RINSE CONTAINER THOROUGHLY by using an intergrated pressure rinsing device or manually rinsing three times. Add washings to sprayer at time of filling and dispose of safely.

IMPORTANT INFORMATION
FOR USE ONLY AS AN AGRICULTURAL HERBICIDE

Crops	Maximum individual dose (litres/product/ha)	Maximum number of treatments	Latest time of application
Wheat (winter), barley (winter)	5 litres (pre-emergence) OR	One per crop	Pre-emergence
	3 litres (up to GS21)		Early tillering (GS 21)
Potatoes	5 litres	One per crop	At emergence (soil rising over emerging potato shoots)

Other specific restrictions:
Do not apply by hand-held equipment.

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 PRACTISE FOR PLANT PROTECTION PRODUCTS.

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.

RESTRICTIONS

Do not apply to crops under stress or to crops suffering from waterlogging, pest attack, disease, frost or the effects of high diurnal temperature changes. Transient yellowing can occur although crops fully recover.
For cereals, seed must be covered by 3cm of soil and for best results apply to a firm, moist seedbed free of clods.
DO NOT sow field beans or broad beans within 12 months of application.

WEEDS CONTROLLED

GRASSWEEDS CONTROLLED	
Susceptible	
Rough stalked meadow grass	Pre-emergence
Moderately susceptible	
Annual meadow grass	Up to 3 true leaves
Loose silky bent	Pre-emergence

DEFY® used pre-emergence will reduce blackgrass and Italian ryegrass populations. It should only be used as part of an appropriate management strategy involving sequences with products of alternative modes of action and the use of cultural techniques.

BROAD-LEAVED WEEDS CONTROLLED	
Susceptible	
Ivy leaved speedwell	Susceptible at cotyledon stage
Black nightshade	Pre-emergence
Chickweed	Susceptible at up to 2 true leaves
Forget Me Not	Pre-emergence
Cranesbill	Pre-emergence
Red dead nettle	Pre-emergence
Common field speedwell	Susceptible at cotyledon stage
Green field speedwell	Susceptible at cotyledon stage
Wall speedwell	Pre-emergence
Moderately susceptible	
Cleavers	Moderately susceptible at 1 whorl
Resistant	
Field pansy	Resistant at emergence

Weed Resistance

Strains of some annual grasses (e.g. black-grass, wild-oats, and Italian rye-grass) have developed resistance to a range of herbicides which may lead to poor control from one or more product or mode of action.
A strategy for preventing and managing such resistance should be adopted. Guidelines have been produced by the Weed Resistance Action Group and copies are available from the HGCA, CPA, your distributor, crop adviser or product manufacturer.
DEFY should only be used for control of herbicide resistant strains of annual grasses as part of an appropriate management strategy, including sequences with herbicides of alternative modes of action and the use of cultural techniques.

CROP SPECIFIC INFORMATION

Winter Cereals

DEFY applied pre-emergence may infrequently slow crop emergence. This effect is transient and has been demonstrated not to adversely affect yield.

Potatoes

For control of a wider spectrum of weeds use DEFY in mixture with an approved formulation of products containing the active ingredient metribuzin, only as a pre-emergence application. Please consult company literature for specific product and best use guidelines. Always observe full label restrictions for any tank mix partner.

Timing

Winter Cereals

DEFY can either be used at pre-emergence of the crop (5 l/ha) or at post-emergence of the crop up to GS 21 (3 l/ha). One application per crop.

Early and Maincrop Potatoes

DEFY may be applied pre-emergence or at emergence of the crop (soil rising over emerging potato shoots). Complete ridge formation before application of DEFY and do not disturb treated soil after application.

Rates of Use

Winter Cereals pre-emergence
5 litres of product per hectare. One application per crop.

OR

Winter Cereals early post-emergence up to GS21
3 litres of product per hectare. One application per crop.

Early and Maincrop Potatoes up to GS11
5 litres of product per hectare. One application per crop.

FOLLOWING CROPS

Winter Cereals, Early and Maincrop Potatoes
Do not sow field beans or broad beans within 12 months of application.

In the case of winter cereal crop failure, Winter Wheat or Winter Barley may be sown immediately in the autumn.

The following crops may be sown in the spring after winter cereal crop failure

Without ploughing
Sunflowers
Maize
Flax
Spring oats
Spring barley
Spring wheat
Spring peas
Spring oilseed rape
Soya beans
With ploughing
Carrots
Lettuce
Onions
Sugar beets
Potatoes
Do not sow
Field beans
Broad beans

The following crops may be sown in the autumn after potato crop failure or normal harvest:

Without ploughing
Winter oats
Winter barley
Winter wheat

MIXING AND SPRAYING
MIXING

Fill the spray tank with half the required volume of clean water and start agitation.

Add the required amount of DEFY and continue agitation whilst adding the rest of the water. Agitate the mixture thoroughly before use and continue agitation during spraying.

SPRAYING
Apply DEFY in a water volume of 200-400 litres per hectare.

Apply DEFY using a conventional fan nozzle producing a medium spray quality as Defined by the British Crop Protection Council. A spray pressure of 2.0-3.0 bars is recommended.

DEFY is rainfast after 1 hour.

WASHING OUT PROCEDURE
Immediately after use, clean the spray equipment thoroughly. Drain the system completely and rinse spray tank, boom and nozzles two to three times with clean water until the foam and all traces of product have been removed.

COMPANY ADVISORY INFORMATION
Apply with a Droplet Spectrum of Coarse to Very Coarse, use minimum 75% Drift Reduction Nozzles at correct drift reduction operating pressures.
Keep forward speeds < 12km/hr.
Ensure Boom height is maintained @ 50cm above target.
Apply at 200 l water/ha.
Wind < 4 m/s.
Do not apply in still wind conditions (Force 0)

Section 6 of the Health and Safety at Work Act
Additional Product Safety Information

(This section does not form part of the product label under the Plant Protection Products Regulations 1995.)

The product label provides information on a specific pesticidal use of the product; do not use otherwise, unless you have assessed any potential hazard involved, the safety measures required and that the particular use has 'Extension of use' approval or is otherwise permitted under the Plant Protection Products Regulations.

The information on this label is based on the best available information including data from test results.

SAFETY DATA SHEET - V9.0
1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY/ UNDERTAKING
1.1 Product Identifier
Product Name: DEFY
Design Code: A8545H
Product Regsistration number: PCS No. 04277
Unique Formula Identifier (UFI): RDC3-T007-900M-ECF2
1.2 Relevant Identified Uses of the substance or mixture and uses advised against
Use of the Substance/Mixture: Herbicide
Recommended restrictions on use: professional use
1.3 Details of the supplier of the safety data sheet
Syngenta Ireland Limited
Block 6 Cleaboy Business Park, Old Kilmeaden Road, Waterford, Ireland
Phone: (051) 377203
Fax: (051) 354748
E-mail address of person responsible for the SDS: cropsales.ie@syngenta.com
1.4 Emergency telephone number
Emergency telephone number: 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)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin irritation, Category 2 - H315: Causes skin irritation.
Eye irritation, Category 2 - H319: Causes serious eye irritation.
Skin sensitisation, Category 1 - H317: May cause an allergic skin reaction.
Aspiration hazard, Category 1 - H304: May be fatal if swallowed and enters airways.
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	H304	May be fatal if swallowed and enters airways.
Statements	H315	Causes skin irritation.
	H317	May cause an allergic skin reaction.
	H319	Causes serious eye irritation.
	H410	Very toxic to aquatic life with long lasting effects.
Precautionary	P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Statements	P264	Wash skin thoroughly after handling.
	P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
	P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
	P331	Do NOT induce vomiting.
	P333+P313	If skin irritation or rash occurs: Get medical advice/ attention.
	P337+P313	If eye irritation persists: 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 containers which can be disposed of as non-hazardous waste.

Hazardous components which must be listed on the label:
- prosulfocarb (ISO)
- hydrocarbons, C9, aromatics

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.
Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.2 Mixtures

Components

Chemical Name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
prosulfocarb (ISO)	52888-80-9 401-730-6 006-072-00-X	Acute Tox. 4; H302 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 2; H411 M-Factor (Acute aquatic toxicity): 1 Acute toxicity estimate Acute oral toxicity: 1,049 mg/kg	>= 70 - < 90

Chemical Name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Hydrocarbons, C9, Aromatics	Not Assigned 649-356-00-4 01-2119455851-35	Flam. Liq. 3; H226 STOT SE 3; H336 (Central nervous system) STOT SE 3; H335 (Respiratory system) Asp. Tox. 1; H304 Aquatic Chronic 2; H411 EUH066	>= 10 - < 20
benzenesulfonic acid, C10-13-alkyl derivs., calcium salts	1335202-81-7 01-2119560592-37	Skin Irrit. 2; H315 Eye Dam. 1; H318 Aquatic Chronic 3; H412	>= 3 - < 10
2-ethylhexan-1-ol	104-76-7 203-234-3 01-2119487289-20	Acute Tox. 4; H332 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 (Respiratory system)	>= 1 - < 10

For explanation of abbreviations see section 16.

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.

Risks: Harmful if swallowed.

May be fatal if swallowed and enters airways.

May cause an allergic skin reaction.

Causes serious eye irritation.

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.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media:

Extinguishing media - small fires - Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Extinguishing media - large fires - Alcohol-resistant foam

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. Flash back possible over considerable distance.

5.3 Advice for fire-fighters

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.

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. Keep people away from and upwind of spill/leak. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Remove all sources of ignition. Pay attention to flashback.

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 materials 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.

7. HANDLING AND STORAGE
7.1 Precautions for safe handling
Advice on safe handling: Avoid contact with skin and eyes. When using do not eat, drink or smoke. Use only in an area containing flame proof equipment. Take precautionary measures against static discharges. 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. No smoking.
7.3 Specific end uses
Specific use(s): For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION
8.1 Control parameters
Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
prosulfocarb (ISO)	52888-80-9	TWA	4 mg/m³	Syngenta
Hydrocarbons, C9, Aromatics	128601-23-0	TWA	19 ppm 100 mg/m³	Supplier
2-ethylhexan-1-ol	104-76-7	TWA	1 ppm 5.4 mg/m³	2017/164/EU
	Further information: Indicative			
		OELV - 8 hrs (TWA)	1 ppm 5.4 mg/m³	IE OEL

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

Substance name	End Use	Exposure routes	Potential health effects	Value
Hydrocarbons, C9, Aromatics	Workers	Inhalation	Long-term systemic effects	150 mg/m³
	Workers	Dermal	Long-term systemic effects	25 mg/kg
	Consumers	Inhalation	Long-term systemic effects	32 mg/m³
	Consumers	Dermal	Long-term systemic effects	11 mg/kg
	Consumers	Oral	Long-term systemic effects	11 mg/kg
benzenesulfonic acid, C10-13-alkyl derivs., calcium salts	Consumers	Oral	Long-term systemic effects	89 mg/kg
	Workers	Dermal	Long-term systemic effects	85 mg/kg
	Workers	Dermal	Long-term systemic effects	1.7 mg/kg
2-ethylhexan-1-ol	Consumers	Ingestion	Long-term systemic effects	1.1 mg/kg
	Workers	Dermal	Long-term systemic effects	23 mg/kg
	Consumers	Dermal	Long-term systemic effects	11.4 mg/kg
	Workers	Inhalation	Acute local effects	106.4 mg/m³
	Consumers	Inhalation	Acute local effects	53.2 mg/m³
	Workers	Inhalation	Long-term systemic effects	53.2 mg/m³
	Consumers	Inhalation	Long-term systemic effects	2.3 mg/m³

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

Substance name	Environmental Compartment	Value
benzenesulfonic acid, C10-13-alkyl derivs., calcium salts	Fresh water	0.023 mg/l
	Marine water	0.002 mg/l

Substance name	Environmental Compartment	Value
	Fresh water sediment	0.174 mg/kg
	Marine sediment	0.017 mg/kg
	Soil	0.62 mg/kg
2-ethylhexan-1-ol	Fresh water	0.017 mg/l
	Marine water	0.0017 mg/l
	Intermittent use/release	0.17 mg/l
	Fresh water sediment	28 mg/kg
	Marine sediment	0.028 mg/kg
	Sewage treatment plant	10 mg/kg
	Soil	0.047 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: Tightly fitting safety goggles. Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded. 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 workplace. Remove and wash contaminated clothing before re-use.
Wear as appropriate: Impervious clothing
Respiratory protection: No personal respiratory protective equipment normally required. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
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.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state : liquid
Colour : pale yellow
Odour : aromatic
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 : 73 °C. Method: Pensky-Martens closed cup
Auto-ignition temperature : 380 °C
Decomposition temperature: No data available
pH : 6. Concentration: 1 % w/v
Viscosity, dynamic : No data available
Viscosity, kinematic : No data available
Solubility in other solvents : No data available

Partition coefficient: noctanol/water: No data available
Vapour pressure : No data available
Density : 1,012 g/cm^3 (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

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: No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Information on likely routes of exposure: Ingestion, Inhalation, Skin contact, Eye contact

Acute toxicity

Harmful if swallowed.

Product:

Acute oral toxicity:	Acute toxicity estimate: > 1,327 mg/kg Method: Calculation method
Acute inhalation toxicity:	Acute toxicity estimate: > 20 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Calculation method
Acute dermal toxicity:	LD50 (Rat, male and female): > 4,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity Remarks: Based on data from similar materials.

Components:

prosulfocarb (ISO):

Acute oral toxicity:	LD50 (Rat, male): 1,049 mg/kg Acute toxicity estimate: 1,049 mg/kg Method: Calculation method
Acute inhalation toxicity:	LC50 (Rat, male and female): > 4.72 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity:	LD50 (Rabbit, male and female): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

Hydrocarbons, C9, Aromatics:

Acute oral toxicity:	LD50 (Rat): 3,952 mg/kg
Acute inhalation toxicity:	LC50 (Rat): > 6,193 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity:	LD50 (Rabbit): > 3,160 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

Acute oral toxicity:	LD50 (Rat): 4,445 mg/kg
Acute dermal toxicity:	LD50 (Rat): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

2-ethylhexan-1-ol:
Acute oral toxicity: LD50 (Rat): 2,047 mg/kg
Acute inhalation toxicity: LC50 (Rat): > 0.89 - 5.3 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The component/mixture is moderately toxic after short term inhalation.
Acute dermal toxicity: LD50 (Rat): > 3,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation	**Serious eye damage/eye irritation**
Not classified due to lack of data. **Components:** **prosulfocarb (ISO):** Species: Rabbit Result: No skin irritation **Hydrocarbons, C9, Aromatics:** Result : Repeated exposure may cause skin dryness or cracking. **cbenzenesulfonic acid, C10-13-alkyl derivs., calcium salts:** Species: Rabbit Result: Irritating to skin. **2-ethylhexan-1-ol:** Species: Rabbit Result: Irritating to skin.	Causes serious eye irritation. **Product:** Species: Rabbit Result: Irritation to eyes, reversing within 21 days. Remarks: Based on data from similar materials. **Components:** **prosulfocarb (ISO):** Species: Rabbit Result: No eye irritation **hydrocarbons, C9, aromatics:** Result: No eye irritation **benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:** Species: Rabbit Result: Risk of serious damage to eyes. **2-ethylhexan-1-ol:** Species: Rabbit Result: Irritation to eyes, reversing within 21 days
Respiratory or skin sensitisation	**Germ cell mutagenicity**
Skin sensitisation May cause an allergic skin reaction. **Respiratory sensitisation** Not classified due to lack of data. **Product:** Test Type: Buehler Test Species: Guinea pig Result: May cause sensitisation by skin contact. Remarks: Based on data from similar materials. **Components:** **prosulfocarb (ISO):** Test Type: Local lymph node assay (LLNA) Species: Mouse Result: The product is a skin sensitiser, sub-category 1B. **hydrocarbons, C9, aromatics:** Result: Does not cause skin sensitisation. **2-ethylhexan-1-ol:** Species: Humans Result: Not a skin sensitizer.	Not classified due to lack of data. **Components:** **prosulfocarb (ISO):** Germ cell mutagenicity - Assessment: Animal testing did not show any mutagenic effects. **hydrocarbons, C9, aromatics:** Germ cell mutagenicity- Assessment: Weight of evidence does not support classification as a germ cell mutagen. **2-ethylhexan-1-ol:** Germ cell mutagenicity- Assessment: Animal testing did not show any mutagenic effects.
Carcinogenicity	**Reproductive toxicity**
Not classified due to lack of data. **Components:** **prosulfocarb (ISO):** Carcinogenicity - Assessment: No evidence of carcinogenicity in animal studies. **hydrocarbons, C9, aromatics:** Carcinogenicity - Assessment: Weight of evidence does not support classification as a carcinogen **2-ethylhexan-1-ol:** Carcinogenicity - Assessment: No evidence of carcinogenicity in animal studies	Not classified due to lack of data. **Components:** **prosulfocarb (ISO):** Reproductive toxicity - Assessment: Weight of evidence does not support classification for reproductive toxicity **hydrocarbons, C9, aromatics:** Reproductive toxicity - Assessment: Weight of evidence does not support classification for reproductive toxicity, No effects on or via lactation **2-ethylhexan-1-ol:** Reproductive toxicity - Assessment: No toxicity to reproduction, No effects on or via lactation

STOT - single exposure	
Not classified due to lack of data. **Components:** **Hydrocarbons, C9, Aromatics:** Target Organs: respiratory tract irritation Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation. The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects. **2-ethylhexan-1-ol:** Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.	
STOT - repeated exposure	**Aspiration toxicity**
Not classified due to lack of data. **Components:** **prosulfocarb (ISO):** Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure. **hydrocarbons, C9, aromatics:** Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure. **2-ethylhexan-1-ol:** Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.	May be fatal if swallowed and enters airways. **Components:** **Hydrocarbons, C9, Aromatics:** 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.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
Product:

Toxicity to fish:	LC50 (*Oncorhynchus mykiss* (rainbow trout)): 3 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates:	EC50 (*Daphnia magna* (Water flea)): 2.2 mg/l Exposure time: 48 h Remarks: Based on data from similar materials
Toxicity to algae:	ErC50 (*Raphidocelis subcapitata* (freshwater green alga)): 0.18 mg/l Exposure time: 96 h Remarks: Based on data from similar materials NOEC (*Raphidocelis subcapitata* (freshwater green alga)): 0.010 mg/l End point: Growth rate Exposure time: 96 h Remarks: Based on data from similar materials

Components:
prosulfocarb (ISO):

Toxicity to fish:	LC50 (*Oncorhynchus mykiss* (rainbow trout)): 0.84 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates:	EC50 (*Daphnia magna* (Water flea)): 0.51 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants:	ErC50 (*Raphidocelis subcapitata* (freshwater green alga)): 0.120 mg/l Exposure time: 72 h NOEC (*Raphidocelis subcapitata* (freshwater green alga)): 0.009 mg/l End point: Growth rate Exposure time: 72 h ErC50 (*Navicula pelliculosa* (Freshwater diatom)): 0.68 mg/l Exposure time: 72 h NOEC (*Navicula pelliculosa* (Freshwater diatom)): 0.2 mg/l End point: Growth rate Exposure time: 72 h

M-Factor (Acute aquatic toxicity): 1

Toxicity to fish (Chronic toxicity): NOEC: 0.31 mg/l
Exposure time: 21 d
Species: *Oncorhynchus mykiss* (rainbow trout)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC: 0.045 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)

Hydrocarbons, C9, Aromatics:

Toxicity to fish : LL50 (*Oncorhynchus mykiss* (rainbow trout)): 9.2 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EL50 (*Daphnia magna* (Water flea)): 3.2 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants: ErC50 (*Raphidocelis subcapitata* (freshwater green alga)): 2.9 mg/l
Exposure time: 72 h
NOELR (*Raphidocelis subcapitata* (freshwater green alga)): 1.0 mg/l
End point: Growth rate
Exposure time: 72 h

Toxicity to fish (Chronic toxicity): NOELR: 1.228 mg/l
Exposure time: 28 d
Species: *Oncorhynchus mykiss* (rainbow trout)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOELR: 2.144 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)

Ecotoxicology Assessment

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

benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:

Toxicity to fish: LC50 (Fish): > 1 - < 10 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (*Daphnia magna* (Water flea)): 2.9 mg/l
Exposure time: 48 h
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants: ErC50 (*Raphidocelis subcapitata* (freshwater green alga)): 29 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials
NOEC (*Raphidocelis subcapitata* (freshwater green alga)): 0.5 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials

Toxicity to fish (Chronic toxicity): NOEC: 0.23 mg/l
Exposure time: 72 d
Species: *Oncorhynchus mykiss* (rainbow trout)
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC: 1.18 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Remarks: Based on data from similar materials

2-ethylhexan-1-ol:

Toxicity to fish : LC50 (*Leuciscus idus* (Golden orfe)): 17.1 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (*Daphnia magna* (Water flea)): 39 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants: EC50 (*Desmodesmus subspicatus* (green algae)): 16.6 mg/l
Exposure time: 72 h

12.2 Persistence and degradability

Components:

prosulfocarb (ISO):

Biodegradability: Result: Not readily biodegradable.

Stability in water: Degradation half life: 159 - 279 d
Remarks: Persistent in water.
Hydrocarbons, C9, Aromatics:
Biodegradability: Result: Readily biodegradable.
benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:
Biodegradability: Result: Readily biodegradable.
2-ethylhexan-1-ol:
Biodegradability: Result: Readily biodegradable.
12.3 Bioaccumulative potential
Components:
prosulfocarb (ISO):
Bioaccumulation: Remarks: Prosulfocarb bioaccumulates.
12.4 Mobility in soil
Components:
prosulfocarb (ISO):
Distribution among environmental compartments: Remarks: Slightly mobile in soils
Stability in soil: Dissipation time: 35 d
Percentage dissipation: 50 % (DT50)
Remarks: Product is not persistent.
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:
prosulfocarb (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).
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

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

14. TRANSPORT INFORMATION

14.1 UN number

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

14.2 UN proper shipping name
ADR: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PROSULFOCARB, SOLVENT NAPHTHA)
RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PROSULFOCARB, SOLVENT NAPHTHA)
IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PROSULFOCARB, SOLVENT NAPHTHA)
IATA: Environmentally hazardous substance, liquid, n.o.s. (PROSULFOCARB, SOLVENT NAPHTHA)

14.3 Transport hazard class(es)

ADR	RID	IMDG	IATA
9	9	9	9

14.4 Packing group

	ADR	RID
	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

Remarks: This product can be subject to exemptions when packaged in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids, or having a net mass of 5 kg or less for solids.

14.5 Environmental hazards

	ADR	RID
	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.

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, mixtures and articles (Annex XVII): Conditions of restriction for the following entries should be considered: Number on list 75, 3

If you intend to use this product as tattoo ink, please contact your vendor.

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): Not applicable

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 Euro-pean Parliament and of the Council on the control of major-accident hazards involving dangerous substances. E1 ENVIRONMENTAL HAZARDS

Other regulations:

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work. Use plant protection products safely. Always read the label and product information before use. Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

15.2 Chemical Safety Assessment

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

16. OTHER INFORMATION

Full text of H-statements	Full text of other abbreviations
H226 Flammable liquid and vapour. H302 Harmful if swallowed. H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H319 Causes serious eye irritation. H332 Harmful if inhaled. H335 May cause respiratory irritation. H336 May cause drowsiness or dizziness. H400 Very toxic to aquatic life.	Acute Tox.: Acute toxicity Aquatic Acute: Acute aquatic toxicity Aquatic Chronic: Chronic aquatic toxicity Asp. Tox.: Aspiration hazard Eye Dam.: Serious eye damage Eye Irrit.: Eye irritation Flam. Liq.: Flammable liquids Skin Irrit.: Skin irritation Skin Sens.: Skin sensitisation STOT SE: Specific target organ toxicity - single exposure

Full text of H-statements	Full text of other abbreviations
H411 Toxic to aquatic life with long lasting effects. H412 Harmful to aquatic life with long lasting effects. EUH066 Repeated exposure may cause skin dryness or cracking.	2017/164/EU : Europe. Commission Directive 2017/164/EU establishing a fourth list of indicative occupational exposure limit values IE OEL : Ireland. List of Chemical Agents and Occupational Exposure Limit Values - Schedule 1 Syngenta: Syngenta Occupational Exposure Limit 2017/164/EU / TWA: Limit Value - eight hours IE OEL / OELV - 8 hrs (TWA): Occupational exposure limit value (8-hour reference period) Syngenta / TWA: Time weighted average

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:**
Eye Irrit. 2	H319	Based on product data or assessment
Skin Sens. 1	H317	Based on product data or assessment
Asp. Tox. 1	H304	Calculation method
Aquatic Acute 1	H400	Based on product data or assessment
Aquatic Chronic 1	H410	Based on product data or assessment
Skin Irrit. 2	H315	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.