

**ARDENT**

Version 1
Revision Date 17.07.2003

GB
102000001664

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING**Product information**

Trade name : ARDENT
 Product code : TADS3201
 Product code : 04318A
 Specification : 12487
 Usage : herbicide
 Company : Bayer CropScience Limited
 Hauxton
 Cambridge
 Cambridgeshire CB2 5HU
 United Kingdom
 Telephone : +44(0)1223 870312
 Telefax : +44(0)1223 872142
 Emergency telephone number : 0800-220876 (UK only)
 +44(0)1223-870312

2. COMPOSITION/INFORMATION ON INGREDIENTS**Chemical nature**

Suspo-emulsion (SE). Contains:
Diflufenican/Trifluralin 40:400 g/l

Hazardous components

Chemical Name	CAS-No.	Symbol(s):	R-phrases)	Concentration [%]
Diflufenican	83164-33-4		R52/53	3.70
Trifluralin (iso)	1582-09-8	Xi, N	R36 R43 R50/53	37.40
Surfactant blend in aromatic/aliphatic solvents			R10 R53	> 1.00 - < 5.00
Ethoxylated polyarylphenol	99734-09-5		R52/53	> 1.00 - < 5.00
Solvent naphtha (petroleum), heavy arom.		Xn, N	R65 R66 R67 R51/53	> 25.00 - < 50.00

3. HAZARDS IDENTIFICATION

Risk advice to man and the environment

**ARDENT**

Version 1
Revision Date 17.07.2003

GB
102000001664

Irritating to eyes.
May cause sensitization by skin contact.
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Repeated exposure may cause skin dryness or cracking.
Vapours may cause drowsiness and dizziness.

4. FIRST AID MEASURES

- General advice : Remove contaminated, soaked clothing immediately and dispose of safely.
- Inhalation : Move the patient to fresh air and keep at rest. If symptoms persist, call a physician.
- Skin contact : Wash off immediately with soap and plenty of water. Seek medical aid if at all worried.
- Eye contact : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- Ingestion : Do not induce vomiting. Wash out mouth with water. Keep at rest. Obtain medical attention.

Notes to physician

- Symptoms : Local:, May cause skin and eye irritation., sensitization
- Symptoms : Systemic:, To date no symptoms are known.
- Risks : Danger of formation of methaemoglobin.
- Treatment : Local treatment:
Initial treatment should be symptomatic and supportive.
- Treatment : Systemic treatment:
In the event of a mouthful or more being ingested, the following measures should be considered:
Monitoring of: kidney, liver and red blood cell count.
Observe specific parameters: methaemoglobinaemia and serum potassium.
Endotracheal intubation should be done and gastric lavage performed, followed by administration of charcoal.
There is no antidote.
Recovery: Spontaneous.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : water spray
alcohol-resistant foam
dry powder
carbon dioxide (CO₂)
- Extinguishing media which must not be used for safety : high volume water jet



ARDENT

Version 1
Revision Date 17.07.2003

GB
102000001664

reasons

Specific hazards during fire fighting : In case of fire the evolution of dangerous gases is possible.

Special protective equipment for fire-fighters : In the event of fire and/or explosion do not breathe fumes. Wear self contained breathing apparatus for fire fighting if necessary.

Further information : Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure being built up due to heat. Whenever possible, contain fire-fighting water by bunding area with sand or earth.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Avoid contact with spilled product or contaminated surfaces. When dealing with a spillage do not eat, drink or smoke.

Environmental precautions : Keep people and animals away. Do not discharge into the drains/surface water/groundwater. If spillage enters drains leading to sewage works inform local water company immediately. If spillage enters rivers or watercourses, inform the Environment Agency (emergency telephone number 0800 807060).

Methods for cleaning up : Take up with absorbent material (e.g. sand, earth or a proprietary absorbent material). Transfer collected material to heavy duty plastic drums and keep safe for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations

Additional advice : Information regarding safe handling, see section 7. Information regarding personal protective equipment, see section 8. Information regarding waste disposal, see section 13. Check also for any local site procedures.

7. HANDLING AND STORAGE

Handling

Advice on safe handling : No specific precautions required when handling unopened packs/containers; follow relevant manual handling advice. Provide good ventilation of working area (local exhaust ventilation if necessary).

Advice on protection against fire and explosion : The product can burn, but it is almost non-combustible. Keep away from sources of ignition - No smoking. Vapours may form explosive mixture with air.



ARDENT

Version 1
Revision Date 17.07.2003

GB
102000001664

Storage

- Requirements for storage areas and containers : Keep containers tightly closed in a cool, well-ventilated place. Store in a place accessible by authorized persons only.
- Further information on storage conditions : Keep away from direct sunlight. Protect against frost.
- Advice on common storage : Keep away from food, drink and animal feedingstuffs.
- Storage temperature : 0 - 30 °C
- Suitable materials : Keep in original packaging, tightly closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Refer to COSHH assessment (Control of substances Hazardous to Health Regulations 1999 as amended). Engineering controls should be used in preference to personal protective equipment wherever practicable.

- Additional advice : Observe: Exposure Limits In Air, Gp3 200mg/m³/50ppm. (aromatic-rich hydrocarbon mixes with > 25% aromatics TRGS 901, No. 72)

Personal protective equipment

- Respiratory protection : Short term: filter apparatus, Filter A
- Hand protection : Chemical resistant gloves
PVC gloves
nitrile gloves
- Eye protection : Chemical resistant goggles must be worn.
- Skin and body protection : Light protective clothing, PVC
PVC boots
- Hygiene measures : When using, do not eat, drink or smoke.
Remove soiled clothing immediately.
Remove soaked clothing immediately.
Clean hands and face at work intervals and after work.
Work in an adequately ventilated room.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

- Form : Liquid
- Colour : orange
- Odour : characteristic

**ARDENT**

Version 1
Revision Date 17.07.2003

GB
102000001664

Safety data

Ignition temperature	: > 450 °C Note: The data refers to naphtha solvent (petroleum).
Upper explosion limit	: 7.00 %(V) Note: The data refers to naphtha solvent (petroleum).
Lower explosion limit	: 0.8 %(V) Note: The data refers to naphtha solvent (petroleum).
Vapour pressure	: 0.3 hPa at 20 °C Note: The data refers to naphtha solvent (petroleum).
Relative vapour density	: 1.00 Note: The data refers to naphtha solvent (petroleum).
Density	: ca. 1.07 g/cm ³ at 20 °C
Water solubility	: Note: Miscible
Partition coefficient (n-octanol/water)	: log Pow: 4.2 Note: The value mentioned relates to the active ingredient diflufenican.
Partition coefficient (n-octanol/water)	: log Pow: 4.83 at: 20 °C Note: The value mentioned relates to the active ingredient trifluralin.
Viscosity, dynamic	: 43 mPa.s at 23 °C
Surface tension	: 26 mN/m at 20 °C
Other information	: The product can burn, but it is almost non-combustible.

10. STABILITY AND REACTIVITY

Conditions to avoid	: Note: Extremes of temperature and direct sunlight.
Materials to avoid	: None
Hazardous reactions	: No hazardous reactions when stored and handled according to prescribed instructions. Note: Stable under recommended storage conditions.

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: LD50 (rat) > 2,000 mg/kg
Acute inhalation toxicity	: LC50 (rat) > 20 mg/l Exposure time: 4 h
Acute dermal toxicity	: LD50 (rat) > 2,000 mg/kg

**ARDENT**

Version 1
Revision Date 17.07.2003

GB
102000001664

Skin irritation	:	rabbit Result: No skin irritation
Eye irritation	:	rabbit Result: Irritating to eyes.
Sensitization	:	guinea pig Result: sensitizing
Further information	:	When inhaled in larger quantities, the solvent vapours cause a narcotic effect. Information given is based on data on the components and the toxicology of similar products

12. ECOLOGICAL INFORMATION**Elimination information (persistence and degradability)**

Bioaccumulation : Rainbow trout (*Oncorhynchus mykiss*)
Bioconcentration factor (BCF): 1,596
Test substance: The value mentioned relates to the active ingredient diflufenican.

Bioaccumulation : Carp
Bioconcentration factor (BCF): 3,142
Test substance: The value mentioned relates to the active ingredient trifluralin.

Ecotoxicity effects

Toxicity to fish : LC50: > 0.1088 mg/l
Rainbow trout (*Oncorhynchus mykiss*)
Exposure time: 96 h
Test substance: The value mentioned relates to the active ingredient diflufenican.
Remarks: The product was tested above its maximum solubility.

Toxicity to fish : LC50: 0.088 mg/l
Rainbow trout (*Oncorhynchus mykiss*)
Exposure time: 96 h
Test substance: The value mentioned relates to the active ingredient trifluralin.

Toxicity to fish : LC50: 0.089 mg/l
Lepomis macrochirus (Bluegill sunfish)
Exposure time: 96 h
Test substance: The value mentioned relates to the active ingredient trifluralin.

Toxicity to daphnia : EC50: > 0.24 mg/l
Water flea (*Daphnia magna*)

**ARDENT**

Version 1
Revision Date 17.07.2003

GB
102000001664

	Exposure time: 48 h Test substance: The value mentioned relates to the active ingredient diflufenican. Remarks: The product was tested above its maximum solubility.
Toxicity to daphnia	: EC50: 0.245 mg/l Daphnia Exposure time: 48 h Test substance: The value mentioned relates to the active ingredient trifluralin.
Toxicity to algae	: EC50: 0.00025 mg/l Scenedesmus subspicatus Exposure time: 72 h Test substance: The value mentioned relates to the active ingredient diflufenican.
Toxicity to algae	: EC50: 12.2 mg/l Senastrum capricornutum Exposure time: 168 h Test substance: The value mentioned relates to the active ingredient trifluralin.
Toxicity to other organisms	: LD50: > 4,000 mg/kg Mallard duck Test substance: The value mentioned relates to the active ingredient diflufenican.
Toxicity to other organisms	: LD50: > 2,150 mg/kg Bobwhite quail Test substance: The value mentioned relates to the active ingredient diflufenican.
Toxicity to other organisms	: LD50: > 2,000 mg/kg Bobwhite quail Test substance: The value mentioned relates to the active ingredient trifluralin.

13. DISPOSAL CONSIDERATIONS

Product	: In accordance with current regulations may be taken to waste disposal site or incineration plant, after consultation with site operator and/or with the responsible authority Can be landfilled or incinerated, when in compliance with local regulations. Advice may be obtained from the local waste regulation authority (part of the Environment Agency in the UK).
Contaminated packaging	: Packaging that cannot be cleaned should be disposed of as product waste. Empty containers can be landfilled after cleaning, when in compliance with the Environmental Protection (Duty of Care) Regulations 1991.

**ARDENT**

Version 1
Revision Date 17.07.2003

GB
102000001664

Waste key for the unused product : 020108 agrochemical waste containing dangerous substances

14. TRANSPORT INFORMATION

ADR/RID/	: UN-No	3082
ADNR	Labels	9
	Packaging group	III
	Hazard no.	90
	Description of the goods	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (TRIFLURALIN SOLUTION)
IMDG	: UN-No	3082
	Class	9
	Packaging group	III
	EmS	NONE
	Marine pollutant	P
	Description of the goods	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (TRIFLURALIN SOLUTION)
IATA	: UN-No	3082
	Class	9
	Packaging group	III
	Description of the goods	Environmentally hazardous substance, liquid, n.o.s. (TRIFLURALIN SOLUTION)
CDG CPL	: UN-No	3082
	Class	9
	Packaging group	III
	Hazard identification number	90
	Emergency action code	2X
	Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (TRIFLURALIN)

15. REGULATORY INFORMATION

This product has been classified in accordance with The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002: CHIP 3.

Hazardous components which must be listed on the label:

- Diflufenican
- Trifluralin (iso)

Exceptional labelling of special preparations : Restricted to professional users.
To avoid risks to man and the environment, comply with the instructions for use.

Further information : WHO-classification: III (Slightly hazardous)

**ARDENT**

Version 1
Revision Date 17.07.2003

GB
102000001664

Symbol(s):	: Xi N	Irritant Dangerous for the environment
R-phrases(s)	: R36 R43 R50/53 R66 R67	Irritating to eyes. May cause sensitization by skin contact. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Repeated exposure may cause skin dryness or cracking. Vapours may cause drowsiness and dizziness.
S-phrases(s)	: S24 S35 S37 S57	Avoid contact with the skin. This material and its container must be disposed of in a safe way. Wear suitable gloves. Use appropriate containment to avoid environmental contamination.

16. OTHER INFORMATION**Further information**

Text of R phrases mentioned in Section 2:

R10	Flammable.
R36	Irritating to eyes.
R43	May cause sensitization by skin contact.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53	May cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

The above information is intended to give general health and safety guidance on the storage and transport of the product.

It is not intended to apply to the use of the product for which purposes the product label and any appropriate technical usage literature available should be consulted and any relevant licenses, consents or approvals complied with.

Bayer CropScience



ARDENT

Version 1
Revision Date 17.07.2003

GB
102000001664

The requirements or recommendations of any relevant site or working procedure, system or policy in force or arising from any risk assessment involving the substance or product should take precedence over any of the guidance contained in this safety data sheet where there is a difference in the information given.

The information provided in this safety data sheet is accurate at the date of publication and will be updated as and when appropriate.

No liability will be accepted for any injury, loss or damage resulting from any failure to take account of information or advice contained in this safety data sheet.

Changes since the last version will be highlighted in the margin. This version replaces all previous versions.