Dow AgroSciences Limited encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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

1.1 Product identifiers
Product Name
GRAZON* 90 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: 0031 115 694 982
Local Emergency Contact: 00 31 115 69 4982

Section 2. Hazards Identification

2.1 Classification of the substance or mixture

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

Xn	R65	Harmful: may cause lung damage if swallowed.
Xi	R36/37/38	Irritating to eyes, respiratory system and skin.
	R43	May cause sensitization by skin contact.
	R67	Vapours may cause drowsiness and dizziness.
N	R51/53	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:
Xn - Harmful.
N - Dangerous for the environment.
Risk Phrases :
R65 - Harmful: may cause lung damage if swallowed.
R36/37/38 - Irritating to eyes, respiratory system and skin.
R43 - May cause sensitization by skin contact.
R67 - Vapours may cause drowsiness and dizziness.
R51/53 - 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.
S23 - Do not breathe vapour.
S24 - Avoid contact with skin.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S35 - This material and its container must be disposed of in a safe way.
S36/37 - Wear suitable protective clothing and gloves.
S46 - If swallowed, seek medical advice immediately and show this container or label.
S57 - Use appropriate containment to avoid environmental contamination.
S62 - If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

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. 64700-56-7 **EC-No.** 265-024-8	—	32.5 %	Triclopyr-2-butoxyethyl ester	Acute Tox., 4, H302 Skin Sens., 1B, H317 Aquatic Acute, 1, H400 Aquatic Chronic, 1, H410
CAS-No. 1702-17-6 **EC-No.** 216-935-4 **Index** 607-231-00-1	—	5.8 %	clopyralid (ISO)	Eye cor/irr, 1, H318
CAS-No. 64742-95-6 **EC-No.** 265-199-0 **Index** 649-356-00-4	—	> 40.0 - < 50.0 %	Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified	Flam. Liq., 3, H226 Asp. Tox., 1, H304 STOT SE, 3, H335 STOT SE, 3, H336 Aquatic Chronic, 2, H411

CAS-No. 95-63-6 **EC-No.** 202-436-9 **Index** 601-043-00-3	—	> 10.0 - < 20.0 %	1,2,4-Trimethylbenzene	Flam. Liq., 3, H226 Acute Tox., 4, H332 Eye cor/irr, 2, H319 STOT SE, 3, H335 Skin Irrit., 2, H315 Aquatic Chronic, 2, H411
CAS-No. 1118-92-9 **EC-No.** 214-272-5	—	< 10.0 %	N,N-Dimethyloctanamide	Skin cor/irr, 2, H315 Eye Dam., 1, H318
CAS-No. 108-67-8 **EC-No.** 203-604-4 **Index** 601-025-00-5	—	< 5.0 %	Mesitylene; 1,3,5-trimethylbenzene	Flam. Liq., 3, H226 Eye cor/irr, 2, H319 Skin cor/irr, 2, H315 STOT SE, 3, H335 Asp. Tox., 1, H304 Aquatic Chronic, 2, H411
CAS-No. 64742-94-5 **EC-No.** 265-198-5 **Index** 649-424-00-3	—	< 5.0 %	Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified	Asp. Tox., 1, H304 Aquatic Chronic, 2, H411
CAS-No. 98-82-8 **EC-No.** 202-704-5 **Index** 601-024-00-X	—	< 5.0 %	Cumene	Flam. Liq., 3, H226 Asp. Tox., 1, H304 STOT SE, 3, H335 Aquatic Chronic, 2, H411
CAS-No. 68953-96-8 **EC-No.** 273-234-6	—	< 5.0 %	Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts	Skin cor/irr, 2, H315 Eye cor/irr, 1, H318

CAS-No. / EC-No. / Index	Amount	Component	Classification: 67/548/EEC
CAS-No. 64700-56-7 **EC-No.** 265-024-8	32.5 %	Triclopyr-2-butoxyethyl ester	Xn: R22; R43; N: R50/53
CAS-No. 1702-17-6 **EC-No.** 216-935-4 **Index** 607-231-00-1	5.8 %	clopyralid (ISO)	Xi: R41
CAS-No. 64742-95-6 **EC-No.** 265-199-0 **Index** 649-356-00-4	> 40.0 - < 50.0 %	Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified	R10; Xn: R65; Xi: R37; R66; R67; N: R51/53
CAS-No. 95-63-6 **EC-No.**	> 10.0 - < 20.0 %	1,2,4-Trimethylbenzene	R10; Xn: R20; Xi: R36/37/38; N: R51, R53

202-436-9 **Index** 601-043-00-3 **CAS-No.** 1118-92-9 **EC-No.** 214-272-5	< 10.0 %	N,N-Dimethyloctanamide	Xi: R38, R41
CAS-No. 108-67-8 **EC-No.** 203-604-4 **Index** 601-025-00-5	< 5.0 %	Mesitylene; 1,3,5-trimethylbenzene	R10; Xn: R65; Xi: R36/37/38; N: R51, R53
CAS-No. 64742-94-5 **EC-No.** 265-198-5 **Index** 649-424-00-3	< 5.0 %	Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified	Xn: R65; R66; N: R51/53
CAS-No. 98-82-8 **EC-No.** 202-704-5 **Index** 601-024-00-X	< 5.0 %	Cumene	R10; Xn: R65; Xi: R37; N: R51, R53
CAS-No. 68953-96-8 **EC-No.** 273-234-6	< 5.0 %	Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts	Xi: R38, R41

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 center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.
Skin Contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center 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 center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.
Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not 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

Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. 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 center or doctor, or going for treatment.
Skin contact may aggravate preexisting 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: Carbon monoxide. Carbon dioxide.
Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur.

5.3 Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Eliminate ignition sources. Move container from fire area if this is possible without hazard. 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). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures: No smoking in area. Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

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. Pump

with explosion-proof equipment. If available, use foam to smother or suppress. 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. Keep away from heat, sparks and flame. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Electrically ground and bond all equipment. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. 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, foodstuffs, drugs or potable water supplies. Minimize sources of ignition, such as static build-up, heat, spark or flame. Avoid temperatures above 40°C (104°F)

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
Cumene	ACGIH	TWA	50 ppm
	EU IOELV	TWA	100 mg/m3 20 ppm Indicative
	EU IOELV	STEL	250 mg/m3 50 ppm Indicative
	UK WEL	TWA	125 mg/m3 25 ppm SKIN
	UK WEL	STEL	250 mg/m3 50 ppm SKIN
clopyralid (ISO)	Dow IHG	TWA	10 mg/m3
Mesitylene; 1,3,5-trimethylbenzene	EU IOELV	TWA	100 mg/m3 20 ppm
	ACGIH	TWA	25 ppm
	UK WEL	TWA	125 mg/m3 25 ppm
1,2,4-Trimethylbenzene	EU IOELV	TWA	100 mg/m3 20 ppm
	ACGIH	TWA	25 ppm
	UK WEL	TWA	125 mg/m3 25 ppm
	Ireland OELV	TWA	100 mg/m3 20 ppm SKIN Indicative OELV
Triclopyr-2-butoxyethyl ester	Dow IHG	TWA	2 mg/m3 D-SEN

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 "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.
It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.
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 chemical goggles. Chemical goggles 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: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). 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, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply. Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.
Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

Engineering Controls

Ventilation: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. 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.
Color	Yellow
Odor	Aromatic
Odor Threshold	No test data available
pH	2.04 *pH Electrode* (neat)
Melting Point	Not applicable
Freezing Point	No test data available
Boiling Point (760 mmHg)	No test data available.
Flash Point - Closed Cup	55.1 °C *Pensky-Martens Closed Cup ASTM D 93*

Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	**Lower**: No test data available **Upper**: No test data available
Vapor Pressure	No test data available
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	1.032 20 °C/4 °C *Digital Density Meter (Oscillating Coil)*
Solubility in water (by weight)	emulsifiable
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Explosive properties	no data available
Oxidizing properties	no data available

9.2 Other information

Section 10. Stability and Reactivity

10.1 Reactivity
No dangerous reaction known under conditions of normal use.

10.2 Chemical stability
Unstable at elevated temperatures.

10.3 Possibility of hazardous reactions
Polymerization will not occur.

10.4 Conditions to Avoid: Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid. Avoid direct sunlight.

10.5 Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong 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.

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.
As product: LD50, rat, female 3,129 mg/kg

Aspiration hazard
Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

Dermal
Prolonged skin contact is unlikely to result in absorption of harmful amounts.
As product: LD50, rat, male and female > 5,000 mg/kg

Inhalation
Vapor concentrations are attainable which could be hazardous on single exposure. May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

As product: The LC50 has not been determined.

Eye damage/eye irritation

May cause moderate eye irritation which may be slow to heal. May cause slight corneal injury.

Skin corrosion/irritation

Brief contact may cause moderate skin irritation with local redness.

Sensitization

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: Blood. Kidney. Liver. Eye. Respiratory tract.

Chronic Toxicity and Carcinogenicity

For the active ingredient(s): Did not cause cancer in laboratory animals. For the minor component(s): Cumene. Has caused cancer in laboratory animals. However, the relevance of this to humans is unknown.

Developmental Toxicity

For the active ingredient(s): Triclopyr butoxyethyl ester. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals. Clopyralid caused birth defects in test animals, but only at greatly exaggerated doses that were severely toxic to the mothers. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure. For the solvent(s): Has caused birth defects in lab animals only at doses producing severe toxicity in the mother. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

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): Clopyralid. In animal studies, did not interfere with reproduction.

Genetic Toxicology

For the active ingredient(s): In vitro genetic toxicity studies were negative. Genetic toxicity studies in animals were negative for component(s) tested.

Component Toxicology - Triclopyr-2-butoxyethyl ester

Inhalation	LC50, 4 h, Aerosol, rat > 4.8 mg/l

Inhalation	Maximum attainable concentration.

Component Toxicology - 3,6-Dichloropicolinic acid (Clopyralid)

Inhalation	As product: LC50, 4 h, Dust, rat > 1 mg/l

Inhalation	Maximum attainable concentration. No deaths occurred at this concentration.

Component Toxicology - Solvent naphtha (petroleum), light aromatic

Inhalation	LC50, 4 h, rat > 10.2 mg/l

Component Toxicology - 1,2,4-Trimethylbenzene

Inhalation	LC50, 4 h, rat 18 mg/l

Component Toxicology - 1,3,5-Trimethylbenzene

Inhalation	No deaths occurred at this concentration. LC50, 4 h, Vapor, rat, male and female > 10.2 mg/l

Component Toxicology - Solvent naphtha (petroleum), heavy aromatic

Inhalation	LC50, 4 h, Aerosol, rat > 4.8 mg/l

Inhalation	LC50, 4 h, Vapor, rat > 0.2 mg/l

Inhalation	No deaths occurred following exposure to a saturated atmosphere.

Component Toxicology - Cumene

Inhalation	LC50, 4 h, rat > 17.6 mg/l

Section 12. Ecological Information

12.1 Toxicity

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species). Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).

Fish Acute & Prolonged Toxicity
LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 h: 1.47 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: 21.6 mg/l
Aquatic Plant Toxicity
ErC50, Pseudokirchneriella subcapitata (green algae), static test, Growth rate inhibition, 72 h: 16.6 mg/l
ErC50, Lemna gibba, Growth inhibition, 7 d: 61.1 mg/l
Toxicity to Above Ground Organisms
oral LD50, Colinus virginianus (Bobwhite quail): 1,156 mg/kg
oral LD50, Apis mellifera (bees): > 370 ug/bee
contact LD50, Apis mellifera (bees): > 413 ug/bee
Toxicity to Soil Dwelling Organisms
LC50, Eisenia fetida (earthworms), 14 d: 224 mg/kg

12.2 Persistence and Degradability

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):
8.7 d; 25 °C; pH 7

OECD Biodegradation Tests:

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

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.3E-11 cm3/s	5.6 h	Estimated.

Theoretical Oxygen Demand: 1.21 mg/mg

Data for Component: **clopyralid (ISO)**

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):
; pH 4 - 9

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
5 - 10 %	28 d	OECD 301B Test	fail

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
5.481E-13 cm3/s	19.5 d	Measured

Theoretical Oxygen Demand: 0.71 mg/mg

Data for Component: **Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified**

For the major component(s): Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. For some component(s): Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Data for Component: **1,2,4-Trimethylbenzene**

Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
4 - 18 %	28 d	OECD 301C Test	Not applicable

Data for Component: **N,N-Dimethyloctanamide**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
> 80 %	28 d	OECD 301F Test	pass

Data for Component: **Mesitylene; 1,3,5-trimethylbenzene**

Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
0 %	28 d	OECD 301C Test	Not applicable
50 %	4.4 d	Calculated	Not applicable

Data for Component: **Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified**

Biodegradation may occur under aerobic conditions (in the presence of oxygen). Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
30 - 41 %	28 d	OECD 301D Test	fail

Data for Component: **Cumene**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
86 %	28 d	OECD 301D Test	pass

Data for Component: **Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

No relevant data found.

12.3 Bioaccumulative potential

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): 4.62

Bioconcentration Factor (BCF): 110; fish

Data for Component: **clopyralid (ISO)**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): -2.63

Bioconcentration Factor (BCF): < 1; Fish; Measured

Data for Component: **Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified**

Bioaccumulation: For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Data for Component: **1,2,4-Trimethylbenzene**

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 3.63 Measured

Bioconcentration Factor (BCF): 33 - 275; Cyprinus carpio (Carp); Measured

Data for Component: **N,N-Dimethyloctanamide**

Bioaccumulation: No relevant data found.

Data for Component: **Mesitylene; 1,3,5-trimethylbenzene**

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 3.42 Measured

Bioconcentration Factor (BCF): 161; Pimephales promelas (fathead minnow); Measured

Data for Component: **Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified**

Bioaccumulation: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Partition coefficient, n-octanol/water (log Pow): 2.9 - 6.1 Measured

Bioconcentration Factor (BCF): 61 - 159; Fish

Data for Component: **Cumene**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): 3.4 - 3.7 Measured

Bioconcentration Factor (BCF): 35.5; Fish; Measured

Data for Component: **Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

Bioaccumulation: No relevant data found.

12.4 Mobility in soil

Data for Component: **Triclopyr-2-butoxyethyl ester**

Mobility in soil: Calculation of meaningful sorption data was not possible due to very rapid degradation in the soil., For the degradation product:, Triclopyr., Potential for mobility in soil is very high (Koc between 0 and 50).

Henry's Law Constant (H): 2.9E-03 Pa*m3/mole.

Data for Component: **clopyralid (ISO)**

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient, soil organic carbon/water (Koc): 4.9**Henry's Law Constant (H):** 1.8E-11 Pa*m3/mole.; 20 °C

Data for Component: **Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified**

Mobility in soil: For the major component(s):, Potential for mobility in soil is low (Koc between 500 and 2000).

Data for Component: **1,2,4-Trimethylbenzene**

Mobility in soil: Potential for mobility in soil is low (Koc between 500 and 2000).

Partition coefficient, soil organic carbon/water (Koc): 720 Estimated.

Henry's Law Constant (H): 6.16E-03 atm*m3/mole; 25 °C Measured

Data for Component: **N,N-Dimethyloctanamide**

Mobility in soil: No relevant data found.

Data for Component: **Mesitylene; 1,3,5-trimethylbenzene**

Mobility in soil: Potential for mobility in soil is low (Koc between 500 and 2000).

Partition coefficient, soil organic carbon/water (Koc): 741.65 Estimated.

Henry's Law Constant (H): 1.97E-02 atm*m3/mole; 25 °C Estimated.

Data for Component: **Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified**

Mobility in soil: No data available.

Data for Component: **Cumene**

Mobility in soil: Potential for mobility in soil is low (Koc between 500 and 2000).

Partition coefficient, soil organic carbon/water (Koc): 800 - 2,800 Estimated.

Henry's Law Constant (H): 1.15E-02 atm*m3/mole; 25 °C Measured

Data for Component: **Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

Mobility in soil: No relevant data found.

12.5 Results of PBT and vPvB assessment

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: **clopyralid (ISO)**

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Data for Component: **Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Data for Component: **1,2,4-Trimethylbenzene**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Data for Component: **N,N-Dimethyloctanamide**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Data for Component: **Mesitylene; 1,3,5-trimethylbenzene**

Non-classified vPvB substance Non-classified PBT substance

Data for Component: **Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Data for Component: **Cumene**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Data for Component: **Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

12.6 Other adverse effects

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

ADR/RID

14.1 UN number

UN1993

14.2 UN proper shipping name

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: Petroleum Distillate and Triclopyr

14.3 Transport hazard class(es)

Hazard Class: 3

14.4 Packing Group

PG III

14.5 Environmental hazards

Environmentally hazardous

14.6 Special precautions for user

Special Provisions: no data available
Hazard identification No:30

ADNR / ADN

14.1 UN number

UN1993

14.2 UN proper shipping name
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: Petroleum Distillate and Triclopyr
14.3 Transport hazard class(es)
Hazard Class: 3
14.4 Packing Group
PG III
14.5 Environmental hazards
Environmentally hazardous
14.6 Special precautions for user
no data available

IMDG
14.1 UN number
UN1993
14.2 UN proper shipping name
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: Petroleum Distillate and Triclopyr
14.3 Transport hazard class(es)
Hazard Class: 3
14.4 Packing Group
PG III
14.5 Environmental hazards
Marine pollutant
14.6 Special precautions for user
EMS Number: F-E,S-E
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

ICAO/IATA
14.1 UN number
UN1993
14.2 UN proper shipping name
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: Petroleum Distillate and Triclopyr
14.3 Transport hazard class(es)
Hazard Class: 3
14.4 Packing Group
PG III
14.5 Environmental hazards
Not applicable
14.6 Special precautions for user
no data available

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 15751/MAPP 15752/PCS No 04261

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.
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.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

Risk-phrases in the Composition section

R10	Flammable.
R20	Harmful by inhalation.
R22	Harmful if swallowed.
R36/37/38	Irritating to eyes, respiratory system and skin.
R37	Irritating to respiratory system.
R38	Irritating to skin.
R41	Risk of serious damage 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.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

Revision

Identification Number: 1007202 / 3027 / Issue Date 2012/11/07 / Version: 1.2
DAS Code: GF-1652
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.