SAFETY DATA SHEET

LIBERTY® 280 SL HERBICIDE

Version 1.0 / USA
102000031468

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SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier	
Trade name	LIBERTY® 280 SL HERBICIDE
Product code (UVP)	84918180
SDS Number	102000031468
EPA Registration No.	264-829
Relevant identified uses of the substance or mixture and uses advised against	
Use	Herbicide
Restrictions on use	See product label for restrictions.
Information on supplier	
Supplier	Bayer CropScience 2 T.W. Alexander Drive Research Triangle PK, NC 27709 United States
Responsible Department	Email: SDSINFO.BCS-NA@bayer.com
Emergency telephone no.	
Emergency Telephone Number (24hr/ 7 days)	1-800-334-7577
Product Information Telephone Number	1-866-99BAYER (1-866-992-2937)

SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200
Skin sensitisation: Category 1
Reproductive toxicity: Category 1B
Specific target organ toxicity - repeated exposure: Category 2
Eye irritation: Category 2A
Acute toxicity(Oral, Inhalation): Category 4

Labelling in accordance with regulation HCS 29CFR §1910.1200

Signal word: Danger

Hazard statements
Harmful if swallowed or if inhaled

Causes serious eye irritation.
May cause damage to organs through prolonged or repeated exposure.
May damage fertility or the unborn child.
May cause an allergic skin reaction.

Precautionary statements
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Do not breathe spray.
Contaminated work clothing should not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.
Rinse mouth.
IF ON SKIN: Wash with plenty of water/ soap.
If skin irritation or rash occurs: Get medical advice/ attention.
Specific treatment (see supplemental first aid instructions on this label).
Wash contaminated clothing before reuse.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/ attention.
IF exposed or concerned: Get medical advice/ attention.
Store locked up.
Dispose of contents/container in accordance with local regulation.

Hazards Not Otherwise Classified (HNOC)
No physical hazards not otherwise classified.
No health hazards not otherwise classified.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Concentration % by weight
Glufosinate ammonium	77182-82-2	24.5
Alkylethersulfate, sodium salt	68891-38-3	22.1
1-Methoxy-2-propanol	107-98-2	1.0
Alkyl polysaccharide	68515-73-1	6.2

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General advice When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Inhalation	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.
Skin contact	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.
Eye contact	Hold eye 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 eye. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Most important symptoms and effects, both acute and delayed

Symptoms	Irritation, sensitising effects

Indication of any immediate medical attention and special treatment needed

Treatment	Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media	
Suitable	Carbon dioxide (CO2), Dry powder, Foam, Water spray
Unsuitable	High volume water jet
Special hazards arising from the substance or mixture	Dangerous gases are evolved in the event of a fire.
Advice for firefighters	
Special protective equipment for firefighters	Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.
Further information	Fight fire from upwind position. Keep out of smoke. 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 diking area with sand or earth. Do not allow run-off from fire fighting to enter drains or water courses.
Flash point	> 93.3 °C
Auto-ignition temperature	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available

Explosivity	Not applicable

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions	Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods and materials for containment and cleaning up

Methods for cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations.
Additional advice	Do not allow product to contact non-target plants. Use personal protective equipment.
Reference to other sections	Information regarding safe handling, see section 7. Information regarding personal protective equipment, see section 8. Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling	Handle and open container in a manner as to prevent spillage. Use only in area provided with appropriate exhaust ventilation.
Advice on protection against fire and explosion	Keep away from heat and sources of ignition.
Hygiene measures	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Wash thoroughly and put on clean clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Keep away from direct sunlight.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Glufosinate ammonium	77182-82-2	0.9 mg/m3 (TWA)		OES BCS*
1-Methoxy-2-propanol	107-98-2	50 ppm (TWA)	02 2013	ACGIH
1-Methoxy-2-propanol	107-98-2	100 ppm (STEL)	02 2013	ACGIH
1-Methoxy-2-propanol	107-98-2	540 mg/m3/150 ppm (STEL)	2010	NIOSH
1-Methoxy-2-propanol	107-98-2	360 mg/m3/100 ppm (REL)	2010	NIOSH
1-Methoxy-2-propanol	107-98-2	360 mg/m3/100 ppm (TWA)	1989	OSHA Z1A
1-Methoxy-2-propanol	107-98-2	540 mg/m3/150 ppm (STEL)	1989	OSHA Z1A
1-Methoxy-2-propanol	107-98-2	540 mg/m3/150 ppm (STEL)	06 2008	TN OEL
1-Methoxy-2-propanol	107-98-2	380 mg/m3/100 ppm (TWA)	06 2008	TN OEL
1-Methoxy-2-propanol	107-98-2	370ug/m3 (AN ESL)	07 2011	TX ESL
1-Methoxy-2-propanol	107-98-2	3700ug/m3 (ST ESL)	07 2011	TX ESL
1-Methoxy-2-propanol	107-98-2	1000ppb (ST ESL)	07 2011	TX ESL
1-Methoxy-2-propanol	107-98-2	100ppb (AN ESL)	07 2011	TX ESL
1-Methoxy-2-propanol	107-98-2	540 mg/m3/150 ppm (STEL)	08 2010	US CA OEL
1-Methoxy-2-propanol	107-98-2	360 mg/m3/100 ppm (TWA PEL)	08 2010	US CA OEL
Sodium alkyl ether sulphate	68585-34-2	5ug/m3 (AN ESL)	03 2014	TX ESL
Sodium alkyl ether sulphate	68585-34-2	50ug/m3 (ST ESL)	03 2014	TX ESL
Dipropylene glycol	25265-71-8	1200ug/m3 (ST ESL)	07 2011	TX ESL
Dipropylene glycol	25265-71-8	120ug/m3 (AN ESL)	07 2011	TX ESL
Alkyl polysaccharide	68515-73-1	600ug/m3 (ST ESL)	07 2011	TX ESL
Alkyl polysaccharide	68515-73-1	60ug/m3 (AN ESL)	07 2011	TX ESL

*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the

following recommendations would apply.

Respiratory protection	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.
Hand protection	Chemical resistant nitrile rubber gloves
Eye protection	Tightly fitting safety goggles
Skin and body protection	Wear long-sleeved shirt and long pants and shoes plus socks.
General protective measures	Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	red
Physical State	Liquid
Odor	characteristic
Odour Threshold	No data available
pH	6.6 - 7.8 at 100 % (23 °C)
Vapor Pressure	No data available
Vapor Density (Air = 1)	No data available
Density	1.15 g/cm³ at 20 °C
Evaporation rate	No data available
Boiling Point	No data available
Melting / Freezing Point	No data available
Water solubility	miscible
Minimum Ignition Energy	Not applicable
Decomposition temperature	Not applicable
Partition coefficient: n-octanol/water	No data available
Viscosity	100 - 300 mPa.s at 20 °C
Flash point	> 93.3 °C
Auto-ignition temperature	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Explosivity	Not applicable

SECTION 10: STABILITY AND REACTIVITY

Reactivity	
Thermal decomposition	Not applicable
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Heat, flames and sparks. Exposure to moisture.
Incompatible materials	Strong acids, Bases, Strong oxidizing agents
Hazardous decomposition products	Carbon oxides Sulphur oxides

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes	Eye contact, Ingestion, Inhalation, Skin Absorption
Immediate Effects	
Eye	Severe eye irritation. Causes substantial but temporary eye injury.
Skin	May cause skin irritation. Harmful if absorbed through skin.
Ingestion	Harmful if swallowed.
Inhalation	May cause irritation.
Information on toxicological effects	
Acute oral toxicity	LD50 (female Rat) > 300 - < 2,000 mg/kg
Acute inhalation toxicity	LC50 (male/female combined Rat) > 2.1 mg/l Exposure time: 4 h Determined in the form of liquid aerosol. (actual)
Acute dermal toxicity	LD50 (male/female combined Rat) > 2,000 mg/kg
Skin irritation	slight irritation (Rabbit)
Eye irritation	Severe eye irritation. (Rabbit)
Sensitisation	Sensitising (Guinea pig)

Assessment STOT Specific target organ toxicity – repeated exposure

Glufosinate-ammonium caused neurobehavioral effects and/or neuropathological changes in animal studies. Glufosinate-ammonium was well tolerated in rats and mice but less well tolerated in the dog in subchronic studies.

Assessment mutagenicity

Glufosinate-ammonium was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment carcinogenicity

Glufosinate-ammonium was not carcinogenic in lifetime feeding studies in rats and mice.

ACGIH

1-Methoxy-2-propanol	107-98-2	Group A4

NTP

None.

IARC

None.

OSHA

None.

Assessment toxicity to reproduction

Implantation loss occurred in a rat multigeneration study with Glufosinate-ammonium. There were no effects on male fertility.

Assessment developmental toxicity

Glufosinate-ammonium caused developmental toxicity only at dose levels toxic to the dams.
Glufosinate-ammonium caused an increased incidence of post implantation losses.

Further information

Acute toxicity studies have been bridged from a similar formulation(s).
The non-acute information pertains to the active ingredient(s).

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish	LC50 (Pimephales promelas (fathead minnow)) 461 mg/l Exposure time: 96 h The value mentioned relates to the active ingredient glufosinate-ammonium.
Toxicity to aquatic invertebrates	LC50 (Daphnia magna (Water flea)) > 560 mg/l Exposure time: 48 h The value mentioned relates to the active ingredient glufosinate-ammonium.
Toxicity to aquatic plants	EC50 (Desmodesmus subspicatus (green algae)) 1,129 mg/l Exposure time: 72 h The value mentioned relates to the active ingredient glufosinate-ammonium.
Biodegradability	Glufosinate-ammonium:

	Not rapidly biodegradable
Koc	Glufosinate-ammonium: Koc: 2.3
Bioaccumulation	Glufosinate-ammonium: Bioconcentration factor (BCF) < 1 Does not bioaccumulate.
Mobility in soil	Glufosinate-ammonium: Highly mobile in soils
Environmental precautions	Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not allow to get into surface water, drains and ground water. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Do not apply when weather conditions favor runoff or drift. Drift or runoff from treated areas may adversely affect non-target plants. Apply this product as specified on the label.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product	Do not contaminate water, food, or feed by disposal. Pesticide, spray mixture or rinse water that cannot be used according to label instructions may be disposed of on site or at an approved waste disposal facility.
Contaminated packaging	Follow advice on product label and/or leaflet. Triple rinse containers. Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State/Provincial and local authorities, by burning. If burned, stay out of smoke.
RCRA Information	Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

SECTION 14: TRANSPORT INFORMATION

According to national and international transport regulations this material is not classified as dangerous goods / hazardous material.

SECTION 15: REGULATORY INFORMATION

EPA Registration No.	264-829

US Federal Regulations
TSCA list

Alkylethersulfate, sodium salt	68891-38-3
1-Methoxy-2-propanol	107-98-2
Alkyl polysaccharide	68515-73-1

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
None.
SARA Title III - Section 302 - Notification and Information
None.
SARA Title III - Section 313 - Toxic Chemical Release Reporting
None.
US States Regulatory Reporting
CA Prop65
This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

US State Right-To-Know Ingredients

1-Methoxy-2-propanol	107-98-2	CA, CT, MN

Canadian Regulations
Canadian Domestic Substance List
None.

Environmental
CERCLA
None.
Clean Water Section 307 Priority Pollutants
None.
Safe Drinking Water Act Maximum Contaminant Levels
None.

EPA/FIFRA Information:
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

Signal word: Warning!

Hazard statements:
Causes substantial but temporary eye injury.
Harmful if swallowed or absorbed through skin.
Do not get in eyes, on skin, or on clothing.
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

49CFR	Code of Federal Regulations, Title 49
ACGIH	US. ACGIH Threshold Limit Values
ATE	Acute toxicity estimate
CAS-Nr.	Chemical Abstracts Service number
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
N.O.S.	Not otherwise specified
NTP	US. National Toxicology Program (NTP) Report on Carcinogens
OECD	Organization for Economic Co-operation and Development
TDG	Transportation of Dangerous Goods
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

NFPA 704 (National Fire Protection Association):

Health - 2	Flammability - 1	Instability - 1	Others - none

HMIS (Hazardous Materials Identification System, based on the Third Edition Ratings Guide)

Health - 1	Flammability - 1	Physical Hazard - 0	PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason for Revision: New Safety Data Sheet.

Revision Date: 01/30/2017

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