



**Material Safety Data Sheet**

**REVOLVER® HERBICIDE**

MSDS Number: 102000022418

MSDS Version 1.0

Revision Date: 04/15/2011

Print Date: 04/15/2011

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Product name** REVOLVER® HERBICIDE  
**MSDS Number** 102000022418  
**EPA Registration No.** 432-1266  
**Product Use** Herbicide

Bayer Environmental Science  
2 T.W. Alexander Drive  
Research Triangle PK, NC 27709  
USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)  
For Product Information call: 1-800-331-2867

**SECTION 2. HAZARDS IDENTIFICATION**

*NOTE: Please refer to Section 11 for detailed toxicological information.*

**Emergency Overview** Caution! Moderate eye irritation. Avoid contact with skin, eyes and clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

**Physical State** liquid

**Odor** aromatic

**Appearance** beige

**Exposure routes** Eye contact, Skin contact, Ingestion, Inhalation

**Immediate Effects**

**Eye** Moderate eye irritation. Avoid contact with eyes.

**Skin** Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. May cause skin irritation. Avoid contact with skin and clothing.

**Ingestion** May be harmful if swallowed. Do not take internally.

**Inhalation** Avoid inhalation of vapour or mist.



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**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Foramsulfuron	173159-57-4	2.34
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	34.76
Calcium dodecylbenzenesulfonate, branched	70528-83-5	1.80
1-Octanol	111-87-5	1.20
Naphthalene	91-20-3	0.35

**SECTION 4. FIRST AID MEASURES**

<b>General</b>	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
<b>Eye</b>	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.
<b>Skin</b>	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.
<b>Inhalation</b>	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.
<b>Notes to physician</b>	
<b>Hazards</b>	Contains hydrocarbon solvents. May pose an aspiration pneumonia hazard.
<b>Treatment</b>	Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

**SECTION 5. FIRE FIGHTING MEASURES**

<b>Flash point</b>	> 60 °C / > 140 °F Information refers to the solvent.
<b>Autoignition temperature</b>	no data available
<b>Lower Flammability Limit</b>	no data available
<b>Upper Flammability Limit</b>	no data available



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<b>Fire and Explosion Hazards</b>	In the event of fire the following may be released: Hydrogen cyanide (hydrocyanic acid) Carbon monoxide (CO) nitrogen oxides (NOx) Hydrogen chloride (HCl)
<b>Suitable extinguishing media</b>	Water spray, Carbon dioxide (CO <sub>2</sub> ), Foam, Sand
<b>Fire Fighting Instructions</b>	Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.  Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

<b>Personal precautions</b>	Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment.
<b>Methods for cleaning up</b>	Clean contaminated floors and objects thoroughly, observing environmental regulations. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.
<b>Additional advice</b>	Do not allow to enter soil, waterways or waste water canal. Do not allow product to contact vegetation.

**SECTION 7. HANDLING AND STORAGE**

<b>Handling procedures</b>	Use only in area provided with appropriate exhaust ventilation.  Keep away from heat and sources of ignition.
<b>Storing Procedures</b>	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.  Protect from freezing.  Keep away from food, drink and animal feedingstuffs.
<b>Work/Hygienic Procedures</b>	Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash



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thoroughly and put on clean clothing.

Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

- General Protection** Follow all label instructions. Train employees in safe use of the product.  
  
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.
- Eye/Face Protection** Tightly fitting safety goggles
- Hand protection** Chemical resistant gloves made of waterproof material such as polyethylene or polyvinyl chloride
- Body Protection** Applicators and other handlers must wear:  
Wear long-sleeved shirt and long pants and shoes plus socks.
- 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.

**Exposure Limits**

Foramsulfuron	173159-57-4	OES BCS*	TWA	10 mg/m3
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	TX ESL	ST ESL	460 ppm
		TX ESL	AN ESL	46 ppm
1-Octanol	111-87-5	WEEL	TWA	50 ppm
		TX ESL	ST ESL	2 ppm
		TX ESL	AN ESL	0.2 ppm
Naphthalene	91-20-3	ACGIH	TWA	10 ppm
		ACGIH	STEL	15 ppm
		NIOSH	REL	10 ppm
		NIOSH	STEL	15 ppm
		OSHA Z1	PEL	10 ppm
		OSHA Z1A	TWA	10 ppm
		OSHA Z1A	STEL	15 ppm
		US CA OEL	TWA PEL	10 ppm
		US CA OEL	STEL	15 ppm
		TX ESL	ST ESL	440 ug/m3
		TX ESL	AN ESL	50 ug/m3
		OES BCS*	TWA	10 ppm
		TX ESL	ST ESL	90 ppb
		TX ESL	AN ESL	10 ppb



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TN OEL	TWA	10 ppm
TN OEL	STEL	15 ppm

\*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	beige
<b>Physical State</b>	liquid
<b>Odor</b>	aromatic
<b>pH</b>	5.0 - 7.0 (10 %) at 23 °C
<b>Vapor Pressure</b>	no data available
<b>Vapor Density (Air = 1)</b>	no data available
<b>Density</b>	ca. 0.96 g/cm <sup>3</sup> at 20 °C
<b>Evaporation rate</b>	no data available
<b>Boiling Point</b>	no data available
<b>Melting / Freezing Point</b>	no data available
<b>Water solubility</b>	dispersible
<b>Decomposition temperature</b>	no data available
<b>Partition coefficient: n-octanol/water</b>	no data available

**SECTION 10. STABILITY AND REACTIVITY**

<b>Conditions to avoid</b>	no data available
<b>Incompatibility</b>	no data available
<b>Hazardous reactions</b>	No hazardous reactions when stored and handled according to prescribed instructions.



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**SECTION 11. TOXICOLOGICAL INFORMATION**

Acute toxicity data have been bridged from a similar formulation containing a similar percentage of the active ingredient, foramsulfuron. The non-acute information pertains to the technical-grade active ingredient.

- Acute oral toxicity**                      rat: LD50: > 5,000 mg/kg
- Acute dermal toxicity**                 rat: LD50: > 5,000 mg/kg
- Acute inhalation toxicity**           rat: LC50: > 5.25 mg/l  
Exposure time: 4 h  
Determined in the form of liquid aerosol.
- rat: LC50: > 20 mg/l  
Exposure time: 1 h  
Determined in the form of liquid aerosol.  
Extrapolated from the 4 hr LC50.
- Skin irritation**                             rabbit: Moderate skin irritation.
- Eye irritation**                             rabbit: Mild eye irritation.
- Sensitisation**                             guinea pig: Sensitising
- Chronic toxicity**                         Foramsulfuron was non-toxic at doses of ~1000 mg/kg/day in chronic studies in rats, mice and dogs.

**Assessment Carcinogenicity**

Foramsulfuron was not carcinogenic in lifetime feeding studies in rats and mice.

<b>ACGIH</b>		
Naphthalene	91-20-3	Group A4
<b>NTP</b>		
Naphthalene	91-20-3	
<b>IARC</b>		
Naphthalene	91-20-3	Overall evaluation: 2B
<b>OSHA</b>		
None.		

- Reproductive toxicity**                 REPRODUCTION: Foramsulfuron was not a reproductive toxicant in a two-generation study in rats.
- DEVELOPMENTAL TOXICITY: Foramsulfuron was not a developmental toxicant in rats and rabbits.

**Assessment neurotoxicity**                 Foramsulfuron did not demonstrate the potential to cause neurotoxicity in standard toxicity studies using laboratory animals.

**Mutagenicity**                                 Foramsulfuron does not possess significant genotoxicity activity based on the



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overall weight of evidence from a battery of in vitro and in vivo tests.

**SECTION 12. ECOLOGICAL INFORMATION**

**Toxicity to aquatic plants** Selenastrum capricornutum  
Growth rate  
EC50: > 5 mg/l  
Exposure time: 96 h

Lemna gibba (duckweed)  
Growth rate  
EC50: 0.75 µg/l  
Exposure time: 7 d

**Acute Toxicity to Aquatic Invertebrates** Water flea (Daphnia magna)  
EC50: 6.9 mg/l  
Exposure time: 48 h

**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 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.

**Ecological Information** Information given is based on data obtained from similar substances.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**General Disposal Guidance** 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.

**Container Disposal** Do not re-use empty containers. Triple rinse containers. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke. Follow advice on product label and/or leaflet.

**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**

49CFR  
UN-Number

3082



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Class 9  
Packaging group III  
Description of the goods ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (NAPHTHALENE)  
RQ Reportable Quantity is reached with 28,571 lb of product.

**IMDG**

UN-Number 3082  
Class 9  
Packaging group III  
Marine pollutant YES  
Description of the goods ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ALKYL (C3-C6) BENZENE SOLUTION)

**IATA**

UN-Number 3082  
Class 9  
Packaging group III  
Environm. Hazardous Mark YES  
Description of the goods ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ALKYL (C3-C6) BENZENE SOLUTION)

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

**SECTION 15. REGULATORY INFORMATION**

**EPA Registration No.** 432-1266

**US Federal Regulations**

**TSCA list**

Solvent Naphtha (petroleum), heavy aromatic 64742-94-5  
Calcium dodecylbenzenesulfonate, branched 70528-83-5  
1-Octanol 111-87-5  
Naphthalene 91-20-3

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

Naphthalene 91-20-3

**SARA Title III - Section 302 - Notification and Information**

None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**

Naphthalene 91-20-3 0.1%

**US States Regulatory Reporting**

**CA Prop65**

This product contains a chemical known to the State of California to cause cancer.  
Naphthalene 91-20-3

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





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**US State Right-To-Know Ingredients**

1-Octanol	111-87-5	MN, RI
Naphthalene	91-20-3	CA, CT, IL, MN, NJ, RI

**Canadian Regulations**

**Canadian Domestic Substance List**

Solvent Naphtha (petroleum), heavy aromatic	64742-94-5
Calcium dodecylbenzenesulfonate, branched	70528-83-5
1-Octanol	111-87-5
Naphthalene	91-20-3

**Environmental**

**CERCLA**

Naphthalene	91-20-3	100 lbs
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**Clean Water Section 307 Priority Pollutants**

None.

**Safe Drinking Water Act Maximum Contaminant Levels**

None.

**International Regulations**

**European Inventory of Existing Commercial Substances (EINECS)**

Solvent Naphtha (petroleum), heavy aromatic	64742-94-5
Naphthalene	91-20-3

**SECTION 16. OTHER INFORMATION**

NFPA 704 (National Fire Protection Association):

Health - 1      Flammability - 1      Reactivity - 0      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 Label and Safety Data Sheet.

Revision Date: 04/15/2011

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