

**SAFETY DATA SHEET**  
**Forza Bio 450 Silvicultural Herbicide**

**SDS # :** FO002207-1-A  
**Revision date:** 2017-05-02  
**Format:** NA  
**Version** 1



**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product Identifier**

**Product Name** Forza Bio 450 Silvicultural Herbicide

**Other means of identification**

**Product Code(s)** FO002207-1-A

**Synonyms** GLYPHOSATE ISOPROPYLAMINE SALT: 2-(phosphonomethylamino)acetate (CAS name); 2-(phosphonomethylamino)acetate (IUPAC name)

**Active Ingredient(s)** Glyphosate, in the form of its isopropylamine salt

**Chemical Family** Organophosphate

**PCP #** 30235

**Recommended use of the chemical and restrictions on use**

**Recommended Use:** Herbicide

**Restrictions on Use:** Use as recommended by the label

**Supplier Address**

FMC Corporation  
2929 Walnut Street  
Philadelphia, PA 19104  
(215) 299-6000 (General Information)  
msdsinfo@fmc.com (E-Mail General Information)

**Emergency telephone number**

For leak, fire, spill or accident emergencies, call:  
1 800 / 424 9300 (CHEMTREC - U.S.A.)  
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)

Medical Emergencies:  
1 800 / 331-3148 (PROSAR - U.S.A. & Canada)  
1 651 / 632-6793 (PROSAR - All Other Countries - Collect)

**2. HAZARDS IDENTIFICATION**

**Classification**

**OSHA Regulatory Status**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B

**GHS Label elements, including precautionary statements****EMERGENCY OVERVIEW****Warning****Hazard Statements**

H332 - Harmful if inhaled

H315 - Causes skin irritation

H320 - Causes eye irritation

H401 - Toxic to aquatic life

**Precautionary Statements - Prevention**

P281 - Use personal protective equipment as required

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P271 - Use only outdoors or in a well-ventilated area

P264 - Wash hands thoroughly after handling

P280 - Wear protective gloves

P273 - Avoid release to the environment

**Precautionary Statements - Response**

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P337 + P313 - If eye irritation persists: Get medical advice/ attention

P302 + P352 - IF ON SKIN: Wash with plenty of water and soap

P312 - Call a POISON CENTER or doctor if you feel unwell

P363 - Wash contaminated clothing before reuse

P332 + P313 - If skin irritation occurs: Get medical advice/attention

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

P311 - Call a POISON CENTER or doctor

P391 - Collect spillage

**Precautionary Statements - Storage**

P405 - Store locked up

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

**Precautionary Statements - Disposal**

Dispose of contents/container according to label directions

**Hazards not otherwise classified (HNOC)**

No hazards not otherwise classified were identified.

**Other Information**

Toxic to aquatic life with long lasting effects. May be harmful in contact with skin.

**3. COMPOSITION/INFORMATION ON INGREDIENTS****Chemical Family**

Organophosphate.

Chemical name	CAS-No	Weight %
Glyphosate IPA Salt	38641-94-0	30-50

Synonyms are provided in Section 1.

**4. FIRST AID MEASURES**

<b>Eye Contact</b>	Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.
<b>Skin Contact</b>	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.
<b>Inhalation</b>	Move to fresh air. If person is not breathing, call 911 (within the U.S. and Canada) or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
<b>Ingestion</b>	Immediate medical attention is required. Call a physician or poison control center immediately. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
<b>Most important symptoms and effects, both acute and delayed</b>	Symptoms from skin contact may include redness, itching and swelling. May cause eye irritation. If inhaled, may cause irritation to the nose, throat, and upper respiratory tract. Symptoms may include coughing and sneezing. Ingestion: no exposure symptoms reported under normal conditions of use. Ingestion of large amounts may cause stomach irritation. Symptoms include nausea, vomiting and diarrhea.
<b>Indication of immediate medical attention and special treatment needed, if necessary</b>	Treat symptomatically.

**5. FIRE-FIGHTING MEASURES**

<b>Suitable Extinguishing Media</b>	Dry chemical, CO2, water spray or regular foam. Avoid heavy hose streams.
<b>Specific Hazards Arising from the Chemical</b>	Combustible liquid. This material may burn when exposed to extreme heat, flame and other ignition sources. Closed containers may rupture if exposed to excess heat or flame due to build-up of internal pressure. Reacts with materials made of iron, galvanized steel and unlined steel, releasing flammable hydrogen gas, which may ignite. Flammable hydrogen gas can produce a highly combustible mixture with air and this mixture could flash or explode if ignited by heat, sparks and flame.
<b>Explosion data</b>	
<b>Sensitivity to Mechanical Impact</b>	Not sensitive.
<b>Sensitivity to Static Discharge</b>	Not expected to be sensitive to static discharge.
<b>Protective equipment and precautions for firefighters</b>	As in any fire, wear self-contained breathing apparatus and full protective gear. Move containers from fire area if you can do it without risk. Use water spray to cool fire exposed surfaces and protect personnel.

**6. ACCIDENTAL RELEASE MEASURES**

<b>Personal Precautions</b>	Isolate and post spill area. Remove all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. For personal protection see section 8.
<b>Other</b>	For further clean-up instructions, call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.
<b>Environmental Precautions</b>	Keep people and animals away from and upwind of spill/leak. Keep material out of lakes, streams, ponds, and sewer drains.
<b>Methods for Containment</b>	Dike to confine spill and absorb with non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump waste into a drum and label contents for disposal.
<b>Methods for cleaning up</b>	Remove all sources of ignition. Ventilate area of release. Stop the spill at source if it is safe to do so. Contain and absorb spilled material with inert, non-combustible absorbent.

material, such as sand. Sweep up and shovel into suitable containers for disposal. For a water spill, confine the spill immediately with booms. Large spills that soak into the ground should be dug up, placed into suitable containers and disposed of appropriately (see Section 13). Notify the appropriate authorities as required.

## 7. HANDLING AND STORAGE

### Handling

Handle in accordance with good industrial hygiene and safety practice. Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Remove all sources of ignition. Keep away from heat, sparks and open flame. No smoking.

This product should be mixed, stored or applied using only stainless steel, fiberglass, plastic, or plastic lined containers and equipment. This product can react with containers made of iron, galvanized steel and unlined steel to produce flammable hydrogen gas. Avoid contact with incompatible materials. Use caution when opening cap. Keep containers tightly closed when not in use.

### Storage

Keep away from open flames, hot surfaces and sources of ignition. Keep in a dry, cool and well-ventilated place. Keep out of reach of children and animals. Keep/store only in original container.

### Incompatible products

Strong oxidizing agents, Alkalies, Iron, Galvanized steel, Unlined steel.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

### Appropriate engineering controls

#### Engineering measures

Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

### Individual protection measures, such as personal protective equipment

#### Eye/Face Protection

For dust, splash, mist or spray exposure, wear chemical protective goggles.

#### Skin and Body Protection

Avoid contact with skin and clothing. Wear long-sleeved shirt, long pants, socks, and shoes. Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

#### Hand Protection

Impervious gloves, Wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

#### Respiratory Protection

Do not breathe vapors, mist or gas. In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit. Use only with adequate ventilation.

#### Hygiene measures

Clean water should be available for washing in case of eye or skin contamination. Remove and wash contaminated clothing before re-use. Wash skin prior to eating, drinking, chewing gum or using tobacco. Shower or bathe at the end of working. Launder work clothing separately from regular household laundry.

#### General information

If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

Appearance	Viscous
Physical State	Liquid
Color	Yellow
Odor	Slight amine
Odor threshold	No information available
pH	4.5 @ 20°C (1% solution)
Melting point/freezing point	> 0 °C / 32 °F
Boiling Point/Range	113 °C / 235 °F
Flash point	> 113 °C / > 235 °F
Evaporation Rate	No information available
Flammability (solid, gas)	No information available
Flammability Limit in Air	
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	1.7 x 10 <sup>-7</sup> mmHg @ 25°C
Vapor density	No information available
Density	No information available
Specific gravity	No information available
Water solubility	Miscible with water
Solubility in other solvents	No information available
Partition coefficient	Log P = -3.3
Autoignition temperature	No information available
Decomposition temperature	No information available
Viscosity, kinematic	No information available
Viscosity, dynamic	No information available
Explosive properties	No information available
Oxidizing properties	No information available
Molecular weight	No information available
Bulk density	9.72 lb/gal

## 10. STABILITY AND REACTIVITY

Reactivity	This product can react with containers made of iron, galvanized steel and unlined steel to produce flammable hydrogen gas which may form a highly combustible gas mixture with air. This gas mixture could flash or explode when exposed to heat, sparks, flame, welder's torch, lighted cigarettes or other ignition sources.
Chemical Stability	Stable under recommended storage conditions.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous polymerization	Hazardous polymerization does not occur. The product does react with caustic (alkaline) materials to liberate heat, however this is an acid-base neutralization reaction and is not polymerisation.
Conditions to avoid	Heat, flames and sparks. Extremes of temperature and direct sunlight.
Incompatible materials	Strong oxidizing agents, Alkalies, Iron, Galvanized steel, Unlined steel.
Hazardous Decomposition Products	See Section 5 for more information.

## 11. TOXICOLOGICAL INFORMATION

### Product Information

LD50 Oral	> 5000 mg/kg (rat)
LD50 Dermal	> 2000 mg/kg (rat)
LC50 Inhalation	> 4.86 mg/L (4-hr) (rat)
Serious eye damage/eye irritation	Contact with eyes may cause irritation.
Skin corrosion/irritation	May cause skin irritation and/or dermatitis.
Sensitization	Not expected to be sensitizing based on the components.

### Information on toxicological effects

Symptoms	No information available.
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**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

<b>Mutagenicity</b>	Not a mutagen based on the evaluated studies
<b>Carcinogenicity</b>	Contains no ingredient listed as a carcinogen
<b>Neurological effects</b>	No information available
<b>Reproductive toxicity</b>	Not expected to have reproductive effects.
<b>Teratogenicity</b>	Not expected to be a teratogen.
<b>STOT - single exposure</b>	May cause damage to organs. See listed target organs below.
<b>STOT - repeated exposure</b>	Causes damage to organs through prolonged or repeated exposure. See listed target organs below.
<b>Target organ effects</b>	Eyes, Skin, Respiratory System, digestive system
<b>Neurological effects</b>	No information available
<b>Aspiration hazard</b>	No information available.

Chemical name	ACGIH	IARC	NTP	OSHA
Glyphosate IPA Salt 38641-94-0		Group 2A		X

**Legend:**

IARC (International Agency for Research on Cancer)

Group 2A - Probably Carcinogenic to Humans

**12. ECOLOGICAL INFORMATION****Ecotoxicity**

<b>Glyphosate IPA Salt (38641-94-0)</b>				
Active Ingredient(s)	Duration	Species	Value	Units
Glyphosate	48 h EC50	Daphnia	21.6	mg/L
	LC50 5 d	Mallard duck	>5,620	mg/kg
	LC50 5 d	Bobwhite quail	>5,620	mg/kg
	EC50 96h	Algae	2.2	mg/L
	LD50	Bee	>100	µg/bee

**Persistence and degradability** Glyphosate: Persistent. Readily hydrolyzes.**Bioaccumulation** Glyphosate: Bioaccumulation is unlikely.**Mobility** Glyphosate: Relatively immobile in soil.**13. DISPOSAL CONSIDERATIONS****Waste disposal methods** Improper disposal of excess pesticide, spray mixture, or rinsate is prohibited. If these wastes cannot be disposed of by use according to label instructions, contact appropriate disposal authorities for guidance. Proper personal protective equipment, as described in Sections 7 and 8, must be worn while handling materials for waste disposal.**Contaminated Packaging** Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions.**14. TRANSPORT INFORMATION****DOT** NOT REGULATED**TDG** NOT REGULATED**ICAO/IATA** NOT REGULATED

IMDG/IMO

NOT REGULATED

**15. REGULATORY INFORMATION****U.S. Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**

Acute health hazard	Yes
Chronic health hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

**Clean Water Act**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

**CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

**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 as required on the pesticide label:*

**Caution**

*Reacts with materials made of iron, galvanized steel and unlined steel, liberating (releasing) hydrogen, which may ignite. May cause eye irritation. Contains material which may cause liver and kidney effects. Dangerous for the environment. Toxic to flora (plants). May be harmful to aquatic organisms.*

**US State Regulations****California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

This product does not contain any substances regulated by state right-to-know regulations

**International Inventories**

Chemical name	TSCA (United States)	DSL (Canada)	EINECS/ELINC S (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)
Glyphosate IPA Salt 38641-94-0		X	X	X	X			X

## CANADA

**WHMIS Statement**

This product has been classified in accordance with the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR

This product is a Pest Control Product and is not regulated as a Controlled Product under the Hazardous Products Act (HPA). However, for reference purposes only, this product would have the following WHMIS Classification if it were regulated as a Controlled Product under the HPA:

**WHMIS Hazard Class**

D2B - Toxic materials

**16. OTHER INFORMATION**

NFPA	Health Hazards 2	Flammability 1	Instability 0	Special Hazards -
HMIS	Health Hazards 2*	Flammability 1	Physical hazard 0	Personal Protection X

\*Indicates a chronic health hazard.

**NFPA/HMIS Ratings Legend**

Severe = 4; Serious = 3; Moderate = 2; Slight = 1; Minimal = 0

**Revision date:**

2017-05-02

**Reason for revision:**

Format Change

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**End of Safety Data Sheet**