



Material Safety Data Sheet

TRIBUTE™ TOTAL

MSDS Number: 102000025052

MSDS Version 1.0

Revision Date: 01/27/2012

Print Date: 03/22/2012

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product name	TRIBUTE™ TOTAL
MSDS Number	102000025052
Product code (UVP)	80192401
EPA Registration No.	432-1519
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! Harmful if swallowed. Moderate eye irritation. Avoid contact with skin, eyes and clothing. Wash thoroughly with soap and water after handling.

Physical State water-dispersible granules

Odor characteristic

Appearance beige

Exposure routes Ingestion, Eye contact, Skin contact

Immediate Effects

Eye Moderate eye irritation. Avoid contact with eyes.

skin Causes skin irritation. Avoid contact with skin and clothing.

Ingestion Harmful if swallowed. Do not take internally.

Potential Environmental Effect Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment. This product may cause adverse effects on non-target plants.



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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Halosulfuron-Methyl	100784-20-1	30.80
Foramsulfuron	173159-57-4	19.80
Thiencarbazon-methyl	317815-83-1	9.91
Sulphonated aromatic polymer, sodium salt		8.80
Anionic tenside		4.00

SECTION 4. FIRST AID MEASURES

General	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
Eye	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.
skin	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.
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.
Notes to physician Treatment	Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

SECTION 5. FIRE FIGHTING MEASURES

Flash point	not applicable
Autoignition temperature	not applicable
Lower Flammability Limit	not applicable
Upper Flammability Limit	not applicable



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Fire and Explosion Hazards	In the event of fire the following may be released: Hydrogen chloride (HCl) Hydrogen cyanide (hydrocyanic acid) Carbon monoxide (CO) Nitrogen oxides (NOx) Sulphur oxides
Suitable extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable extinguishing media	High volume water jet
Fire Fighting Instructions	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. Keep out of smoke. Fight fire from upwind position. In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.
Methods for cleaning up	Sweep up or vacuum up spillage and collect in suitable container for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations.
Additional advice	Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal. Do not allow product to contact non-target plants.

SECTION 7. HANDLING AND STORAGE

Handling procedures	Use only in area provided with appropriate exhaust ventilation. No special precautions required.
Storing Procedures	Keep containers tightly closed in a dry, cool and well-ventilated place. Store in original container. Store in a place accessible by authorized persons only. Keep away from food, drink and animal feedingstuffs.
Work/Hygienic Procedures	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.



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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 thoroughly and put on clean clothing.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General Protection 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.

Follow all label instructions. Train employees in safe use of the product.

Eye/Face Protection Goggles

Hand protection Chemical resistant nitrile rubber gloves

Body Protection 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/m ³
	Kaolin	1332-58-7	ACGIH	TWA
		NIOSH	REL	5 mg/m ³
		NIOSH	REL	10 mg/m ³
		US CA OEL	TWA PEL	2 mg/m ³
		TX ESL	ST ESL	20 ug/m ³
		TX ESL	AN ESL	2 ug/m ³
		TX ESL	ST ESL	20 ug/m ³
		TX ESL	AN ESL	2 ug/m ³
		TWA	10 mg/m ³	
		TWA	5 mg/m ³	

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance beige

Physical State water-dispersible granules

Odor characteristic



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pH	4.5 - 5.5 (10 %) at 23 °C
Vapor Pressure	not applicable
Vapor Density (Air = 1)	not applicable
Bulk density	587 - 688 kg/m ³
Evaporation rate	no data available
Boiling Point	not applicable
Melting / Freezing Point	not applicable
Water solubility	dispersible
Minimum Ignition Energy	no data available
Decomposition temperature	no data available
Partition coefficient: n-octanol/water	no data available
Viscosity	not applicable

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	no data available
Incompatibility	no data available
Hazardous reactions	No dangerous reaction known under conditions of normal use.
Chemical Stability	Stable under normal conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Only acute toxicity studies have been performed on the formulated product. The non-acute information pertains to the technical-grade active ingredients, foramsulfuron and thiencarbazon-methyl.

Acute oral toxicity	rat: LD50: 3,129 mg/kg
Acute dermal toxicity	rat: LD50: > 5,000 mg/kg



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Acute inhalation toxicity rat: LC50: > 2.02 mg/l
Exposure time: 4 h
Determined in the form of a respirable aerosol.

Skin irritation rabbit: Slight irritation

Eye irritation rabbit: Slight irritation

Sensitisation guinea pig: Non-sensitizing.

Chronic toxicity Foramsulfuron was non-toxic at doses of ~1000 mg/kg/day in chronic studies in rats, mice and dogs.

Chronic toxicity Thiencarbazon-methyl caused urinary tract irritation in long term studies in mice, rats and dogs.

Assessment Carcinogenicity

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

Thiencarbazon-methyl was not carcinogenic in a lifetime feeding study in rats. In a lifetime feeding study in mice, there was a low incidence of urinary bladder tumors at high doses secondary to the chronic irritation due to the presence of bladder stones. Thiencarbazon-methyl was considered not to be directly carcinogenic in mice.

ACGIH

None.

NTP

None.

IARC

None.

OSHA

None.

Reproductive toxicity REPRODUCTION:
Foramsulfuron was not a reproductive toxicant in a two-generation study in rats.

Thiencarbazon-methyl was not a reproductive toxicant in a two-generation study in rats. Thiencarbazon-methyl caused toxicity in offspring at doses producing systemic toxicity in adult rats.

DEVELOPMENTAL TOXICITY:

Foramsulfuron was not a developmental toxicant in rats and rabbits.

Thiencarbazon-methyl was not a primary developmental toxicant in rats and rabbits. Developmental effects were observed but were considered secondary to maternal toxicity.

Assessment Foramsulfuron did not demonstrate the potential to cause neurotoxicity in



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neurotoxicity standard toxicity studies using laboratory animals.

Thiencarbazone-methyl was not a neurotoxicant in acute and subchronic neurotoxicity screening studies in rats.

Mutagenicity

Foramsulfuron does not possess significant genotoxicity activity based on the overall weight of evidence from a battery of in vitro and in vivo tests.

Assessment Ingredient: Thiencarbazone-methyl was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity to fish

Rainbow trout (*Oncorhynchus mykiss*)

LC50: > 100 mg/l

Exposure time: 96 h

The value mentioned relates to the active ingredient foramsulfuron.

Rainbow trout (*Oncorhynchus mykiss*)

LC50: > 104 mg/l

Exposure time: 96 h

The value mentioned relates to the active ingredient thiencarbazone-methyl.

Rainbow trout (*Oncorhynchus mykiss*)

LC50: > 131 mg/l

Exposure time: 96 h

The value mentioned relates to the active ingredient halosulfuron-methyl.

Toxicity to aquatic plants

Pseudokirchneriella subcapitata

EC50: 75 mg/l

Exposure time: 72 h

The value mentioned relates to the active ingredient foramsulfuron.

Pseudokirchneriella subcapitata

Growth rate

IC50: 1.017 mg/l

Exposure time: 72 h

The value mentioned relates to the active ingredient thiencarbazone-methyl.

Lemna gibba (duckweed)

Growth rate

IC50: 0.00131 mg/l

Exposure time: 7 d

The value mentioned relates to the active ingredient thiencarbazone-methyl.

Lemna gibba (duckweed)

Growth rate

EC50: 0.000217 mg/l

Exposure time: 7 d



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The value mentioned relates to the active ingredient halosulfuron-methyl.

Acute Toxicity to Aquatic Invertebrates

Daphnia
LC50: > 100 mg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient foramsulfuron.

Water flea (Daphnia magna)
EC50: > 98.6 mg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient thiencazone-methyl.

Water flea (Daphnia magna)
EC50: > 107 mg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient halosulfuron-methyl.

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.

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

Not dangerous goods / not hazardous material

IMDG

UN-Number

3077

Class

9

Packaging group

III



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Marine pollutant YES
Description of the goods ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(THIENCARBAZONE-METHYL, HALOSULFURON-METHYL MIXTURE)

IATA

UN-Number 3077
Class 9
Packaging group III
Environm. Hazardous Mark YES
Description of the goods ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(THIENCARBAZONE-METHYL, HALOSULFURON-METHYL MIXTURE)

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. 432-1519

US Federal Regulations

TSCA list

Sulphonated aromatic polymer, sodium salt

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

None.

Canadian Regulations

Canadian Domestic Substance List

Sulphonated aromatic polymer, sodium salt

Environmental

CERCLA

None.

Clean Water Section 307 Priority Pollutants

None.

Safe Drinking Water Act Maximum Contaminant Levels



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None.

SECTION 16. OTHER INFORMATION

NFPA 704 (National Fire Protection Association):

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

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

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

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

Reason for Revision: New Material Safety Data Sheet.

Revision Date: 01/27/2012

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