

Product Name: SONALAN* 10G Herbicide

Issue Date: 05/15/2009

Print Date: 04 May 2011

Dow AgroSciences LLC 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.

1. Product and Company Identification

Product Name

SONALAN* 10G Herbicide

COMPANY IDENTIFICATION

Dow AgroSciences LLC
A Subsidiary of The Dow Chemical Company
9330 Zionsville Road
Indianapolis, IN 46268-1189
USA

Customer Information Number:

800-992-5994

SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact:

800-992-5994

Local Emergency Contact:

352-323-3500

2. Hazards Identification

Emergency Overview

Color: Yellow to green

Physical State: Granules.

Odor: Aromatic

Hazards of product:

WARNING! Causes eye irritation. Isolate area. Slipping hazard. Cancer hazard.
Can cause cancer.

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects

Eye Contact: May cause moderate eye irritation. May cause moderate corneal injury. Effects may be slow to heal. Solid or dust may cause irritation due to mechanical action.

Skin Contact: Prolonged exposure not likely to cause significant skin irritation.

* Indicates a Trademark

* Indicates a Trademark of Dow AgroSciences LLC

Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: Inhalation is unlikely due to physical state. Production material tested was ground to produce a fine respirable powder. No adverse effects are anticipated from single exposure to dust.

Ingestion: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

Effects of Repeated Exposure: For the active ingredient(s): Ethalfuralin. In animals, effects have been reported on the following organs: Blood. Kidney. Liver. Thyroid. Dust may cause irritation to upper respiratory tract (nose and throat). Repeated excessive exposure to crystalline silica may cause silicosis, a progressive and disabling disease of the lungs.

Cancer Information: An increase in benign mammary fibroadenomas was observed in female rats dosed with Ethalfuralin. Crystalline silica has been shown to cause cancer in laboratory animals and humans.

Birth Defects/Developmental Effects: For the active ingredient(s): Ethalfuralin. Has caused birth defects in laboratory animals only at doses toxic to the mother.

3. Composition Information

| Component | CAS # | Amount |
|------------------------------|------------|---------------------|
| Ethalfuralin | 55283-68-6 | 10.0 % |
| Silica, crystalline (quartz) | 14808-60-7 | >= 6.3 - <= 8.9 % |
| Balance | | >= 81.1 - <= 83.7 % |

4. First-aid measures

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. Eye wash fountain should be located in immediate work area.

Skin Contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

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.

Ingestion: No emergency medical treatment necessary.

Notes to 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.

Emergency Personnel Protection: 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.

5. Fire Fighting Measures

Extinguishing Media: This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire.

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. This material does not burn. Fight fire for other material that is burning. 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). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire

from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Unusual Fire and Explosion Hazards:

Hazardous Combustion Products: Fire conditions may cause this product to decompose. Refer to section 10 - Thermal Decomposition.

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Small spills: Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

Personal Precautions: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Spilled material may cause a slipping hazard. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage

Handling

General Handling: Avoid contact with eyes. Wash thoroughly after handling. Keep out of reach of children. Do not swallow. Avoid breathing dust or mist. Avoid contact with skin and clothing. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage

Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

8. Exposure Controls / Personal Protection

Exposure Limits

| Component | List | Type | Value |
|------------------------------|---------|-----------------------------|--|
| Ethalfuralin | Dow IHG | TWA | 3 mg/m ³ |
| Silica, crystalline (quartz) | ACGIH | TWA | 0.025 mg/m ³ |
| | Z3 | Respirable fraction. TWA | 2.4 millions of particles per cubic foot of air |
| | Z3 | Respirable. TWA | The exposure limit is calculated from the equation, $250/(\%SiO_2+5)$, using a value of 100% SiO ₂ . Lower percentages of SiO ₂ will yield higher exposure limits. 0.1 mg/m ³ |
| | Z3 | Respirable. TWA | The exposure limit is calculated from the equation, $10/(\%SiO_2+2)$, using a value of 100% SiO ₂ . Lower percentages of SiO ₂ will yield higher exposure limits. |

| | | |
|----|-----------------|---|
| Z3 | TWA Total dust. | 0.3 mg/m3 The exposure limit is calculated from the equation, $30/(\%SiO_2+2)$, using a value of 100% SiO ₂ . Lower values of % SiO ₂ will give higher exposure limits. |
|----|-----------------|---|

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.

Personal Protection

Eye/Face Protection: Use chemical goggles.

Skin Protection: No precautions other than clean body-covering clothing should be needed.

Hand protection: Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized.

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, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, in dusty atmospheres, use an approved particulate respirator. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

| | |
|---|--|
| Physical State | Granules. |
| Color | Yellow to green |
| Odor | Aromatic |
| Flash Point - Closed Cup | <i>Literature</i> Not applicable |
| Flammable Limits In Air | Lower: <i>Literature</i> Not applicable Upper: <i>Literature</i> Not applicable |
| Autoignition Temperature | No test data available |
| Vapor Pressure | Not determined |
| Boiling Point (760 mmHg) | <i>Literature</i> Not applicable. |
| Vapor Density (air = 1) | Not determined |
| Specific Gravity (H ₂ O = 1) | No test data available |
| Freezing Point | No test data available |
| Melting Point | No test data available |
| Solubility in water (by weight) | <i>Literature</i> Insoluble |
| pH | 6.5 <i>Literature</i> (aqueous 10%/90%) |
| Decomposition Temperature | No test data available |

10. Stability and Reactivity

Stability/Instability

Thermally stable at typical use temperatures.

Conditions to Avoid: Active ingredient decomposes at elevated temperatures.

Incompatible Materials: None known.

Hazardous Polymerization

Will not occur.

Thermal Decomposition

Decomposition products depend upon temperature, air supply and the presence of other materials.

11. Toxicological Information

Acute Toxicity

Ingestion

LD50, Rat, male and female > 5,000 mg/kg

Skin Absorption

LD50, Rabbit > 5,000 mg/kg

Inhalation

LC50, 4 h, Aerosol, Rat, male and female 5.00 mg/l

Sensitization

Skin

Did not cause allergic skin reactions when tested in guinea pigs.

Repeated Dose Toxicity

For the active ingredient(s): Ethalfuralin. In animals, effects have been reported on the following organs: Blood. Kidney. Liver. Thyroid. Dust may cause irritation to upper respiratory tract (nose and throat). Repeated excessive exposure to crystalline silica may cause silicosis, a progressive and disabling disease of the lungs.

Chronic Toxicity and Carcinogenicity

An increase in benign mammary fibroadenomas was observed in female rats dosed with Ethalfuralin. Crystalline silica has been shown to cause cancer in laboratory animals and humans.

Carcinogenicity Classifications:

| Component | List | Classification |
|------------------------------|-------|---------------------------------------|
| Silica, crystalline (quartz) | ACGIH | Suspected human carcinogen.; Group A2 |
| | NTP | Known carcinogen. |
| | ACGIH | Suspected human carcinogen.; Group A2 |
| | IARC | Human carcinogen.; 1 |

Developmental Toxicity

For the active ingredient(s): Ethalfuralin. Has caused birth defects in laboratory animals only at doses toxic to the mother.

Reproductive Toxicity

For the active ingredient(s): Ethalfuralin. In animal studies, did not interfere with reproduction.

Genetic Toxicology

For the active ingredient(s): Ethalfuralin. In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

12. Ecological Information

ENVIRONMENTAL FATE

Data for Component: **Ethalfuralin**

Movement & Partitioning

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Expected to be relatively immobile in soil (Koc > 5000).

Partition coefficient, n-octanol/water (log Pow): 5.11 Measured

Partition coefficient, soil organic carbon/water (Koc): 4,100 - 8,400 Measured

Bioconcentration Factor (BCF): 1,180; fish; Measured

Persistence and Degradability

|| No relevant information found.

Stability in Water (1/2-life):

|| : 0E+00 l/m_s

Data for Component: **Silica, crystalline (quartz)**

Movement & Partitioning

|| Partitioning from water to n-octanol is not applicable.

Persistence and Degradability

|| Biodegradation is not applicable.

ECOTOXICITY

Data for Component: **Ethalfuralin**

|| Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species). Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg). Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

Fish Acute & Prolonged Toxicity

|| LC50, bluegill (*Lepomis macrochirus*), static, 96 h: 0.054 - 0.102 mg/l

|| LC50, rainbow trout (*Oncorhynchus mykiss*), flow-through, 96 h: 0.136 mg/l

Aquatic Invertebrate Acute Toxicity

|| EC50, eastern oyster (*Crassostrea virginica*), flow-through, 96 h, shell growth inhibition: 0.100 - 0.172 mg/l

|| EC50, water flea *Daphnia magna*, static, 48 h, survival: 0.365 mg/l

Aquatic Plant Toxicity

|| EC50, green alga *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum*), Growth rate inhibition, 7 d: 0.004 - 0.0091 mg/l

|| EC50, duckweed *Lemna sp.*, Growth inhibition (cell density reduction), 14 d: 0.031 mg/l

Aquatic Invertebrates Chronic Toxicity Value:

| ChV Value mg/l | Species | Test Type | Endpoint | Exposure Time |
|----------------|------------------------------------|--------------|----------|---------------|
| 0.0298 mg/l | water flea <i>Daphnia magna</i> | flow-through | growth | 21 d |

Toxicity to Non-mammalian Terrestrial Species

|| dietary LC50, mallard (*Anas platyrhynchos*): > 5,000 ppm

|| oral LD50, bobwhite (*Colinus virginianus*): > 2,000 mg/kg

|| contact LD50, Honey bee (*Apis mellifera*): 46 - 100 micrograms/bee

|| oral LD50, Honey bee (*Apis mellifera*): 109.9 micrograms/bee

Toxicity to Soil Dwelling Organisms

|| LC50, Earthworm *Eisenia foetida*, adult, 14 d: > 1,000 mg/kg

Data for Component: **Silica, crystalline (quartz)**

|| Not expected to be acutely toxic to aquatic organisms.

13. Disposal Considerations

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.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

| | |
|-----------------------------------|-----|
| Immediate (Acute) Health Hazard | Yes |
| Delayed (Chronic) Health Hazard | Yes |
| Fire Hazard | No |
| Reactive Hazard | No |
| Sudden Release of Pressure Hazard | No |

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

Toxic Substances Control Act (TSCA)

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

16. Other Information**Hazard Rating System**

| | | | |
|-------------|---------------|-------------|-------------------|
| NFPA | Health | Fire | Reactivity |
| | 3 | 1 | 1 |

Revision

Identification Number: 50580 / 1016 / Issue Date 05/15/2009 / Version: 2.0

DAS Code: NAF-64

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

| | |
|--------------|---|
| N/A | Not available |
| W/W | Weight/Weight |
| OEL | Occupational Exposure Limit |
| STEL | Short Term Exposure Limit |
| TWA | Time Weighted Average |
| ACGIH | American Conference of Governmental Industrial Hygienists, Inc. |
| DOW IHG | Dow Industrial Hygiene Guideline |
| WEEL | Workplace Environmental Exposure Level |
| HAZ_DES | Hazard Designation |
| Action Level | A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded. |

Dow AgroSciences LLC 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.