



MATERIAL SAFETY DATA SHEET

BAYER CORPORATION
AGRICULTURE DIVISION
P.O. Box 4913 Hawthorn Road
Kansas City, MO 64120-001

TRANSPORTATION EMERGENCY:

CALL CHEMTREC: (800) 424-9300
DISTRICT OF COLUMBIA: (202) 483-7616

NON-TRANSPORTATION:

BAYER EMERGENCY PHONE: (800) 414-0244
BAYER INFORMATION PHONE: (800) 842-8020

1. PRODUCT IDENTIFICATION:

PRODUCT NAME: SENCOR DF
PRODUCT CODE: 14175
EPA REGISTRATION NO.: 3125-325
CHEMICAL FAMILY: Triazinone
CHEMICAL NAME: 4-Amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4H)-one
SYNONYMS: Metribuzin, Lexone, Sencor Sprayule, SENCOREX, SENCORAL
FORMULA: C8 H14 N4 O S

2. HAZARDOUS INGREDIENTS:

INGREDIENT NAME	EXPOSURE LIMITS	CONCENTRATION (%)
Sencor (metribuzin)		75 %
21087-64-9	OSHA : 5.000 mg/m ³ TWA ACGIH: 5.000 mg/m ³ TWA	
Ingredient 1972		5-10 %
Specific chemical identity is withheld as a trade secret.		
	OSHA : Not Established ACGIH: Not Established	
Ingredient 1611		1-5 %
Specific chemical identity is withheld as a trade secret.		
	OSHA : Not Established ACGIH: Not Established	
Silica		<1 %
14808-60-7	OSHA : .100 mg/m ³ TWA (respirable) ACGIH: .100 mg/m ³ (TWA) (respirable)	

3. PHYSICAL PROPERTIES:

PHYSICAL FORM: Solid
COLOR: Off-white to light gray with bluish cast
ODOR: Musty
MOLECULAR WEIGHT: 214.3 (for SENCOR/metribuzin)
BOILING POINT: Not applicable
MELTING/FREEZING POINT: Not applicable
SOLUBILITY IN WATER: 1100 ppm @ 20 °C (for SENCOR/metribuzin)
SPECIFIC GRAVITY: Not established
BULK DENSITY: 33-37 lbs/cu ft
% VOLATILE BY VOLUME: Not established
VAPOR PRESSURE: 1.2 x 10⁻⁷ mm Hg @ 20 °C (for SENCOR/metribuzin)
VAPOR DENSITY: Not established (Air = 1)

4. FIRE AND EXPLOSION DATA:

FLASH POINT: Not Applicable
FLAMMABLE LIMITS:
UPPER EXPLOSIVE LIMIT (UEL)(%): Not Applicable
LOWER EXPLOSIVE LIMIT (LEL)(%): Not Applicable
EXTINGUISHING MEDIA: Water; Dry Chemical
SPECIAL FIRE FIGHTING PROCEDURES: Keep out of smoke, cool exposed containers with water spray. Fight fires from upwind position. Use self-contained breathing equipment. Contain runoff to prevent entry into sewers or waterways.
UNUSUAL FIRE / EXPLOSION HAZARDS: During the routine handling of this material there should be little risk of a dust explosion. However, tests on SENCOR (metribuzin), technical grade, indicate that an explosive mixture can develop. Therefore, appropriate preventative measures should be taken. If a large dust cloud develops, turn off any devices that may cause a spark and leave the area until the cloud dissipates. Additional information on this subject is available upon request.

5. HUMAN HEALTH DATA:

ROUTE(S) OF ENTRY: Dermal contact and inhalation of the product are the primary routes of entry. Inhalation of aerosol during spray application of the product as part of its end use is another potential route of entry.
HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:
ACUTE EFFECTS OF EXPOSURE: No specific systemic symptoms of overexposure are known to occur in humans. Animal studies have shown that this material is mildly toxic orally and essentially non-toxic dermally. It can cause minimal irritation to the conjunctiva with all irritation resolving within 4 days.
CHRONIC EFFECTS OF EXPOSURE: Based on the results of animal studies, no deleterious effects or symptoms would be expected from chronic exposure to the active ingredient in this product during normal use. This product contains less than 1% crystalline silica. Excessive long-term exposure to crystalline silica may cause silicosis, a form of disabling, progressive and sometimes fatal fibrotic lung disease. Severe and permanent lung damage may result.
CARCINOGENICITY:
NTP: Crystalline silica is classified as an NTP Anticipated Human Carcinogen - "Substances or groups of substances that may reasonably be anticipated to be carcinogens."
IARC: "IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans", Vol. 42 - for Crystalline Silica (Quartz) - determined that "There is sufficient evidence for the carcinogenicity of crystalline silica to experimental animals. There is limited evidence for the carcinogenicity of crystalline silica to humans."
OSHA: Not regulated
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: No specific medical conditions are known which may be aggravated by exposure to the active ingredient in this product. However, pulmonary and respiratory diseases may be aggravated by exposure to crystalline silica, a component of this formulation.

6. EMERGENCY AND FIRST AID PROCEDURES:

FIRST AID FOR EYES: Hold eyelids open and flush with copious amounts of water for 15 minutes. Seek medical attention immediately.

FIRST AID FOR SKIN: Remove contaminated clothing. Wash skin with soap and water. Get medical attention if irritation develops or persists. If signs of intoxication (poisoning) occur, get medical attention immediately.

FIRST AID FOR INHALATION: If a person is overcome by excessive exposure to dusts or aerosols of this material, remove to fresh air or uncontaminated area. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention as soon as possible.

FIRST AID FOR INGESTION: If ingestion is suspected, call a physician or poison control center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger, or, if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once. Do not induce vomiting or give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN: No specific antidote is available. Treat poisoning victims symptomatically. In case of poisoning, it is also requested that Bayer Corp., Agriculture Division, Kansas City, Missouri be notified. Telephone: 816/242-2582

7. EMPLOYEE PROTECTION RECOMMENDATIONS:

EYE PROTECTION REQUIREMENTS: Goggles may be useful in some situations to prevent dust or spray mixture from getting into eyes.

SKIN PROTECTION REQUIREMENTS: Avoid skin contact. Use chemical-resistant gloves to prevent dermal exposure.

RESPIRATOR REQUIREMENTS: Under normal handling conditions no respiratory protection is needed. However, if needed to prevent respiratory irritation, a NIOSH-approved respirator for dusts and mists or for pesticides may be used.

VENTILATION REQUIREMENTS: Maintain exposure levels below the applicable exposure limit through the use of general and local exhaust ventilation.

ADDITIONAL PROTECTIVE MEASURES: Clean water should be available for washing in case of eye or skin contamination. Educate and train employees in safe use of the product. Follow all label instructions. Launder clothing separately after use. Wash thoroughly after handling.

8. REACTIVITY DATA:

STABILITY: This is a stable material.

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITIES: Not Noted

INSTABILITY CONDITIONS: Sustained temperatures above 100 °F; highly alkaline conditions for extended periods of time. Sencor may react with ketones and aldehydes.

DECOMPOSITION PRODUCTS: Proposed products include: CO₂, SO₂, methyl mercaptan, amines

9. SPILL AND LEAK PROCEDURES:

SPILL OR LEAK PROCEDURES: Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing dusts and skin contact. Avoid generating dust (a fine water spray mist, plastic film cover, or floor sweeping compound may be used if necessary). Use recommended protective equipment while carefully sweeping up spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and water. Rinse with water. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways or contact vegetation.

WASTE DISPOSAL METHOD: Follow container label instructions for disposal of wastes generated during use in compliance with the FIFRA product label. In other situations, bury in an EPA approved landfill or burn in an incinerator approved for pesticide destruction. Do not reuse container.

10. SPECIAL PRECAUTIONS & STORAGE DATA:

STORAGE TEMPERATURE(MIN/MAX): None/30 day average not to exceed 100 °F

SHELF LIFE: Not Noted

SPECIAL SENSITIVITY: Heat, moisture

HANDLING/STORAGE PRECAUTIONS: Store in a cool dry area. Store in an area designated specifically for pesticides. Do not store near any materials intended for use or consumption by humans or animals. Store away from hormone-type herbicides.

11. SHIPPING INFORMATION:

TECHNICAL SHIPPING NAME: Metribuzin

FREIGHT CLASS BULK: Compounds, Tree or Weed Killing, NOI - NMFC 50320

FREIGHT CLASS PACKAGE: Compounds, Tree or Weed Killing, NOI - NMFC 50320

PRODUCT LABEL: Not Noted

DOT (DOMESTIC SURFACE):

PROPER SHIPPING NAME: Not Regulated

HAZARD CLASS OR DIVISION: Non-Regulated

IMO / IMDG CODE (OCEAN):

PROPER SHIPPING NAME: Not Regulated

HAZARD CLASS DIVISION NUMBER: Non-Regulated

ICAO / IATA (AIR):

PROPER SHIPPING NAME: Not Regulated

HAZARD CLASS DIVISION NUMBER: Non-Regulated

12. ANIMAL TOXICITY DATA:

Only acute studies have been performed on this product as formulated. The non-acute information pertains to the active ingredient, metribuzin.

ACUTE TOXICITY:

ORAL LD50: Male Rat: 2379 mg/kg -- Female Rat: 2794 mg/kg

DERMAL LD50: Male and Female Rabbit: >5000 mg/kg

INHALATION LC50: : Analytically determined 4 hr and 1 hr LC50 data are not available on this formulation.

EYE EFFECTS: Rabbit: Only minimal irritation to the conjunctiva was observed with all irritation resolving within 4 days.

SKIN EFFECTS: Rabbit: Not a dermal irritant

SENSITIZATION: Guinea Pig: Dermal sensitization studies have not been performed on this product as formulated, however, the active ingredient, metribuzin, is not a dermal sensitizer.

ANIMAL TOXICITY DATA continued:

SUBCHRONIC TOXICITY:

In a three week dermal toxicity study, rabbits were treated with the active ingredient, metribuzin, at doses of 40, 200 or 1000 mg/kg for 6 hours/day, 5 days/week. At the high dose, there was evidence of increased cholesterol levels and liver enzyme induction. Thyroxine levels were increased at doses of 200 mg/kg and above. All of these effects were slight and reversible. The no-observed-effect-level (NOEL) was 40 mg/kg. In subacute inhalation studies, rats were exposed to aerosol concentrations of metribuzin ranging from 31 to 745 mg/cubic meter for 6 hours/day, 5 days/week for 3 weeks. Effects observed included behavioral changes, decreased body weight gains, liver enzyme induction and organ weight effects. The no-observed-effect-concentration (NOEC) was 31 mg/cubic meter.

CHRONIC TOXICITY:

Dogs were administered metribuzin for 2 years at dietary concentrations of 25, 100 and 1500 ppm. Effects observed at the high concentration included decreases in body weight and food consumption, anemia, liver effects, kidney effects, testicular effects and mortality. The NOEL was 100 ppm. In chronic studies using rats, metribuzin was administered for 2 years at dietary concentrations ranging from 25 to 900 ppm. At concentrations of 300 ppm and greater, effects observed included decreased body weight gains, increased thyroid weights and changes in thyroid hormones. At 900 ppm, there was an increased incidence of follicular hyperplasia seen in the thyroid. The systemic NOEL was 30 ppm.

CARCINOGENICITY:

Metribuzin was investigated for carcinogenicity in chronic feeding studies using rats and mice at maximum levels of 900 and 3200 ppm, respectively. There was no evidence of a carcinogenic potential observed in either species.

MUTAGENICITY:

Numerous in vitro and in vivo mutagenicity studies have been conducted with metribuzin. The data, taken collectively, demonstrates that metribuzin is not genotoxic.

DEVELOPMENTAL TOXICITY:

In a teratology study using rats, metribuzin was administered orally during gestation at doses of 25, 70 or 200 mg/kg. Maternal toxic effects were observed at all doses. At 200 mg/kg, fetotoxic effects observed included reduced median placental weights, reduced median fetal weights, and an increased incidence of delayed ossification. Teratogenic effects were not observed at any of the doses tested. The NOELs for maternal and developmental toxicity were less than 25 and 70 mg/kg, respectively. When rabbits were administered metribuzin by oral gavage during gestation at doses of 10, 30 or 85 mg/kg, there was no evidence of any developmental effects. The NOELs for maternal and developmental toxicity were 30 and 85 mg/kg, respectively.

REPRODUCTION:

In a reproduction study using rats, metribuzin was administered for 2 generations at dietary concentrations of 30, 150 or 750 ppm. Offspring at the high dose exhibited reduced body weight gains starting at Day-14 lactation, an age correlating with the consumption of treated diets. The NOELs for maternal and reproductive toxicity were 30 and 750 ppm, respectively.

13. FEDERAL REGULATORY INFORMATION:

OSHA STATUS: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA STATUS: This product is exempt from TSCA Regulation under FIFRA Section 3 (2)(B)(ii) when used as a pesticide.

CERCLA REPORTABLE QUANTITY: None

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: No components listed

SECTION 311/312 HAZARD CATEGORIES: Immediate Health Hazard

SECTION 313 TOXIC CHEMICALS: No components listed

RCRA STATUS: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

14. OTHER REGULATORY INFORMATION:

NFPA 704M RATINGS:

Health: 1 Flammability: 3 Reactivity: 1 Other:
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. NFPA ratings are provided by Bayer Corporation as a customer service.

15. APPROVALS:

REASON FOR ISSUE: Change company name; revise Sections II-V, VIII, X-XII, & XIV

PREPARED BY: V. C. Standart

APPROVED BY: D. C. Eberhart

TITLE: Product Safety Manager

APPROVAL DATE: 12/28/93

SUPERSEDES DATE: 02/08/91

MSDS NUMBER: 08438

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