

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

N-SERVE* 24E NITROGEN STABILIZER

Effective Date: 3/4/03
Product Code: 56092
MSDS: 000547

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: N-Serve* 24E Nitrogen Stabilizer

COMPANY IDENTIFICATION:

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Nitrapyrin: 2-Chloro-6-(trichloromethyl) pyridine	CAS# 001929-82-4	22.60%
Chlorinated pyridines, Total, Including 4,6-dichloro-2-trichloro methylpyridine	CAS# 001129-19-7	2.25%
Other Ingredients, Total, Including Xylene range aromatic solvent	CAS# 064742-95-6	75.15%
Xylene	CAS# 001330-20-7	
1,2,4-Trimethylbenzene	CAS# 000095-63-6	
Cumene	CAS# 000098-82-8	

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Hazardous Chemical. Combustible and mildly corrosive. Light amber liquid with an aromatic solvent odor. May cause eye irritation with corneal injury, which may result in permanent impairment, even blindness. May cause drying, flaking, or skin irritation. LD₅₀ for skin absorption in rabbits is 2440 mg/kg. Oral LD₅₀ for rats is 3616 mg/kg. Inhalation LC₅₀ for o-xylene in rats is 6500 ppm for 4 hours. Toxic to fish and aquatic invertebrates.

EMERGENCY PHONE NUMBER: 800-992-5994

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause severe irritation with corneal injury, which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Vapor may cause eye irritation experienced as mild discomfort and redness.

SKIN: Prolonged or repeated contact may cause skin irritation. May cause drying or flaking of the skin. Skin contact may cause an allergic skin reaction in a small proportion of individuals. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in rabbits is 2440 mg/kg. Repeated skin contact may result in absorption of harmful amounts.

INGESTION: Low toxicity if swallowed. The oral LD₅₀ for rats is 3616 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia. Observations in animals include lethargy and irritation or ulceration of the stomach.

INHALATION: Vapor concentrations are attainable which could be hazardous on single exposure. The LC₅₀ for xylene in rats is 6500 ppm for 4 hours. Excessive exposure to solvent may cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness, progressing to incoordination and unconsciousness.

SYSTEMIC (OTHER TARGET ORGANS) EFFECTS:

Nitrapyrin, in animals, effects have been reported on the following organs: kidney and liver. Solvent has been reported to cause liver, kidney, and blood effects at high exposure levels. Xylene, a minor component of this mixture, is reported to have caused hearing loss in laboratory animals upon inhalation of high concentrations; such effects have not been reported in humans.

CANCER INFORMATION: Xylene was not found to be carcinogenic in a National Toxicology Program bioassay in rats and mice. Nitrapyrin has been shown to cause cancer in laboratory animals. Tumors were observed only at levels, which produced significant toxicity, thus exceeding, the maximum tolerated dose.

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TERATOLOGY (BIRTH DEFECTS): Nitrapyrin did not cause birth defects in laboratory animals. Solvent was toxic to the fetus in laboratory animal tests, but only at doses that were toxic to the mothers. Very high concentrations of solvent (producing severe toxicity to adult animals) induced an increase in cleft palate in mice, which is a common developmental abnormality in mice and is associated with stress to the maternal animals. No malformations were induced at exposures less than those causing severe toxicity to the adult animals. Exaggerated doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. In animal inhalation studies, xylene caused toxicity to the fetus but did not cause birth defects.

REPRODUCTIVE EFFECTS: In animal studies, nitrapyrin did not interfere with reproduction. In a 3-generation reproduction study on the solvent, the only effects observed were at exposures that produced severe toxicity to the parent animals.

4. FIRST AID:

EYES: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

SKIN: Wash skin with plenty of water.

INGESTION: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

INHALATION: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

NOTE TO PHYSICIAN: The decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Supportive care. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 102°F (39°C)
METHOD USED: TCC

FLAMMABLE LIMITS

LFL: 1.0%
UFL: 7.0%

EXTINGUISHING MEDIA: Foam, alcohol foam, CO₂, or dry chemical.

FIRE & EXPLOSION HAZARDS: Treat as a petroleum solvent fire. Noxious gases may evolve. Keep vapors away from possible ignited sources.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained breathing apparatus and full protective equipment.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Absorb spills with dry material such as sand and sweep up for disposal. Report large spills to Dow AgroSciences at 800-992-5994.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: See product label. Keep out of reach of children. Prevent eye contact. Avoid breathing vapors if generated. Avoid contact with skin and clothing. Do not swallow. Do not use, pour, spill, or store near heat or open flame. Do not use equipment containing aluminum, magnesium or their alloys unless diluted with anhydrous ammonia. Do not use stainless steel for long-term storage unless product and vapor space is kept free of moisture. Do not contaminate water, food, or feed by storage or disposal. Store above 18°F to keep product in solution. Below 14°F, crystals may form and settle to the bottom. To re-dissolve the crystals, allow the contents to warm up to about 70°F and to stand for several days at that temperature. Once the crystals have dissolved, a gentle rolling of the container will ensure a uniform mixture of the contents. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):

Xylene: ACGIH TLV is 100 ppm TWA, 150 ppm STEL, A4. OSHA PEL is 100 ppm TWA.

Nitrapyrin: ACGIH TLV is 10 mg/M³ TWA, 20 mg/M³ STEL, A4. OSHA PEL is 15 mg/M³ total dust, 5 mg/M³ respirable.

Aromatic 100 (xylene range aromatic solvent): None established. Supplier recommends a guideline of 50 ppm for the total product, which is a mixture of petroleum hydrocarbons.

Trimethylbenzene: ACGIH TLV is 25 ppm.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Use only with adequate ventilation.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use a NIOSH approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration. For emergency and other conditions where the exposure guideline may be greatly exceeded, use a NIOSH approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. In confined or poorly ventilated areas, use a NIOSH approved self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

SKIN PROTECTION: Use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, gloves, boots, apron or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly.

EYE/FACE PROTECTION: Use chemical goggles. Eye wash fountain should be located in immediate work area. If exposure causes eye discomfort, use a NIOSH approved full-face respirator.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: 315°F (157°C) approximately

VAPOR PRESSURE: 3 mmHg @ 20°C approximately

VAPOR DENSITY: 3.7 calculated

SOLUBILITY IN WATER: Emulsifiable

SPECIFIC GRAVITY: 0.990(20°C)

APPEARANCE: Light amber liquid

ODOR: Aromatic solvent odor

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Combustible. Petroleum derivative solvent.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Mildly corrosive. Do not use equipment containing aluminum, magnesium, or their alloys.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride and oxides of nitrogen may be formed under fire conditions.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY: For xylene, in-vitro and animal mutagenicity studies were negative. For nitrapyrin, in-vitro mutagenicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

ECOTOXICOLOGY: Based largely or completely on information for nitrapyrin. Material is moderately toxic to fish on an acute basis (LC₅₀ between 1 and 10 mg/L). Material is moderately toxic to aquatic invertebrates on an acute basis (LC₅₀ or EC₅₀ is between 1 and 10 mg/L).

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13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Excess wastes are acutely hazardous. Improper disposal of excess waste, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

Dow AgroSciences does not recommend shipping this material by air.

For non-bulk containers shipped by land:
Not regulated

For non-bulk containers shipped by air or water:
FLAMMABLE LIQUIDS, N.O.S. (AROMATIC NAPHTHA)
/3/UN1993/PGIII

For bulk containers shipped by land or water:
FLAMMABLE LIQUIDS, N.O.S. (CONTAINS XYLENE
RANGE AROMATIC SOLVENT)/3/UN1993/PGIII/RQ
(XYLENE)

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented 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 from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION</u>
1,2,4-Trimethylbenzene	000095-63-6	21.5%
Cumene	000098-82-8	1%
Xylene (mixed isomers)	001330-20-7	2%
Nitrapyrin	001929-82-4	22.6%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard
A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

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STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>LIST</u>
Xylene (mixed isomers)	001330-20-7	NJ1 NJ2 NJ3 PA1 PA3
Nitrapyrin	001929-82-4	NJ3 NJ2 PA1

NJ1=New Jersey Special Health Hazard Substance (present at > or = to 0.1%).

NJ2=New Jersey Environmental Hazardous Substance (present at > or = to 1.0%).

NJ3=New Jersey Workplace Hazardous Substance (present at > or = to 1.0%).

PA1=Pennsylvania Hazardous Substance (present at > or = to 1.0%).

PA3=Pennsylvania Environmental Hazardous Substance (present at > or = to 1.0%).

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

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

<u>CATEGORY</u>	<u>RATING</u>
Health	3
Flammability	2
Reactivity	0

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA, which may require reporting of releases:

<u>Chemical Name</u>	<u>CAS#</u>	<u>RQ</u>	<u>% in Product</u>
Xylene	001330-20-7	100	2%
Cumene	000098-82-8	5000	1%

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 2, 3, 4, 8, 14, & 15
Reference: DR-0140-3243
Replaces MSDS dated: 2/14/00
Document Code: D03-012-171
Replaces Document Code: D03-012-170

The Information Herein Is Given In Good Faith, But No Warranty, Express or Implied, Is Made. Consult Dow AgroSciences for Further Information.