



Material Safety Data Sheet

ABOLISH ⁰ 8 EC (high flash)

PAGE 1 of

10

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products is regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling. All necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ABOLISH ⁰ 8 EC
EPA REGISTRATION NUMBER: 59639-79
VC NUMBERS: VC-1109
SYNONYM(S): None

MANUFACTURER

VALENT USA CORPORATION
P.O. Box 8025
1333 N. California Blvd, Suite 600
Walnut Creek, CA 94596-8025

EMERGENCY TELEPHONE NUMBERS

HEALTH EMERGENCY OR SPILL (24 hr):
(800) 892-0099
TRANSPORTATION (24 hr): CHEMTREC
(800) 424-9300 or (202) 483-7616

PRODUCT INFORMATION

AGRICULTURAL PRODUCTS: (800) 6VALENT
PROFESSIONAL PRODUCTS: (800) 89VALENT

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name (CAS #) [Chemical Name]	Percent	Exposure Limit	Ref.
THIOBENCARB* (28249-77-6) [S-[(4-chlorophenyl)methyl]diethylcarbamothioate]	81.48 - 86.52	None	---
Total Hydrocarbons	4 - 7	500 ppm 300 ppm 100 ppm	OSHA ACGIH Mfgr.
OTHER**	12 - 19	None	---

* Active Ingredient

** Other ingredients, which are maintained as trade secrets, are any substances other than an active ingredient contained in this product. Some of these may be hazardous, but their identity is withheld because they are considered trade secrets. The hazards associated with the other ingredients are addressed in this document. Specific information on other ingredients for the management of exposures, spills, or safety assessments can be obtained by a treating physician or nurse by calling **1-800-892-0099** at any time.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW	
CAUTION:	<ul style="list-style-type: none"> - CAUSES EYE IRRITATION - HARMFUL IF SWALLOWED - AVOID CONTACT WITH EYES, SKIN, AND CLOTHING - AVOID BREATHING SPRAY MIST - KEEP OUT OF REACH OF CHILDREN

POTENTIAL HEALTH EFFECTS

Acute Toxicity (Primary Routes of Exposure)

Signs and Symptoms of Systemic Effects: Exposure to lethal or near-lethal levels of thiobencarb technical may cause the following systemic toxic effects: lethargy, salivation, excessive tear formation, labored respiration, loss of balance and decreased body weight.

This product contains a solvent mixture. Solvents, when inhaled can cause nasal and respiratory irritation and central nervous system effects including dizziness, weakness, fatigue, nausea, headache and possibly unconsciousness and even death. Ingestion of solvents can cause

gastrointestinal irritation, nausea, vomiting and diarrhea.

Eye: This product is expected to cause brief and/or minor eye irritation. The degree of injury will depend on the amount and duration of contact and the speed and thoroughness of the first aid treatment. The expected adverse effects resulting from an exposure may include redness and possibly some minor swelling.

Skin: This product has been shown to cause brief and/or minor skin irritation. The degree of injury will depend on the amount and duration of the contact and the speed and thoroughness of the first aid treatment. The expected adverse health effects resulting from an exposure may include redness and possibly some minor swelling.

This product is not expected to cause allergic skin reactions.

This product has been shown to be minimally toxic when absorbed through the skin. The degree of injury will depend on the amount of material absorbed and the speed and thoroughness of the first aid treatment. The expected adverse systemic health effects resulting from an exposure are described above.

Ingestion: This product has been shown to be slightly toxic when ingested. The degree of injury will depend on the amount of material ingested and the speed and thoroughness of the first aid treatment. The expected adverse systemic health effects resulting from an exposure are described above.

Inhalation: Exposure to very high concentrations may result in respiratory irritation. Signs and symptoms may include nasal discharge, sore throat, coughing and difficulty in breathing.

This product has been shown to be minimally toxic when inhaled. The degree of injury will depend on the amount of material inhaled and the speed and thoroughness of the first aid treatment. The expected adverse systemic health effects are described above.

Chronic Toxicity (Including Cancer): Thiobencarb technical did not produce cancer in laboratory animals and there is no evidence that thiobencarb technical causes cancer in humans.

This product contains a solvent mixture. Reports have associated repeated and prolonged occupational overexposures to solvents with permanent brain and nervous system damage. Symptoms reported include fatigue, concentration difficulties, anxiety, depression, rapid mood swings and short term memory loss. Since many other diseases cause some or all of these conditions, a doctor should be consulted if any appear.

Prolonged or repeated contact may cause dryness and cracking of the skin.

This product is not listed as a carcinogen by the Environmental Protection Agency (EPA), National Toxicology Program (NTP), the International Agency for Research on cancer (IARC), or the Occupational Safety and Health Administration (OSHA).

Teratology (Birth Defects) Information: No developmental toxicity was produced in animals exposed to thiobencarb technical, even at doses that were toxic to the pregnant animal.

Reproduction Information: Thiobencarb technical did not produce reproductive toxicity in animal studies.

A component of this product may contain trace amounts of ethylene oxide that could accumulate in the headspace of storage and transport vessels. Repeated or prolonged airborne exposures may be harmful since ethylene oxide is a cancer and reproductive system hazard.

For complete discussion of the toxicology data from which this evaluation was made, refer to Section 11. For Regulatory Information, refer to Section 15.

SECTION 4: FIRST AID MEASURES

EMERGENCY NUMBER (800) 892-0099

EYES: Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. If irritation persists, see a doctor.

SKIN: If on skin, remove contaminated clothing, wash skin with plenty of soap and water. Wash contaminated clothing separately before reuse.

INGESTION: If swallowed, drink 1 or 2 glasses of water (or milk) and induce vomiting by touching the back of the throat with finger. If possible, contact a physician, Poison Control Center, or emergency center before inducing vomiting. Do not induce vomiting or give anything by mouth to an unconscious person. Take person and product container to the nearest emergency treatment center.

INHALATION: If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

FLASH POINT: 197 °F **METHOD:** Setaflash Closed Cup Tester
AUTOIGNITION: NA
EXTINGUISHING MEDIA: CO₂, dry chemical, foam, water fog.
FLAMMABLE LIMITS (% by volume in air): Lower: NDA Upper: NDA

NFPA RATINGS: Health 1; Flammability 2; Reactivity 1; Special NA

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

FIRE FIGHTING INSTRUCTIONS: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 °F.

Products of combustion from fires involving this material may be toxic. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and fire fighting equipment before reuse. Read the entire document.

HAZARDOUS COMBUSTION PRODUCTS: Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur and nitrogen. Combustion may produce toxic compounds of chlorine. Incomplete combustion can produce carbon monoxide.

SECTION 6: ACCIDENTAL RELEASE MEASURES

VALENT EMERGENCY PHONE NUMBER: (800) 892-0099

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300

OBSERVE PRECAUTIONS IN SECTION 8: PERSONAL PROTECTION

Stop the source of the spill if safe to do so. Contain the spill to prevent further contamination of the soil, surface water, or ground water.

FOR SPILLS ON LAND:

CONTAINMENT: Avoid runoff into storm sewers and ditches that lead to waterways. Contain spilled liquids with dry sorbents.

CLEANUP: Clean up spill immediately. Absorb spill with inert material (such as dry sand or earth), then place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container.

FOR SPILLS IN WATER:

CONTAINMENT: This material forms an emulsion in water. Stop or reduce contamination of any water. Isolate contaminated water.

CLEANUP: Remove contaminated water for treatment or disposal.

SECTION 7: HANDLING AND STORAGE

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

DO NOT USE OR STORE near flame, sparks or hot surfaces. Use only in well ventilated area. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

Keep pesticide in original container. Do not store or transport near food or feed. Do not contaminate food or feed. Do not put concentrate into food or drink containers. Do not dilute concentrate in food or drink containers. Store in a cool, dry place, out of direct sunlight.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

EYE PROTECTION: Do not get this material in your eyes. Eye contact can be avoided by wearing protective eyewear.

RESPIRATION/VENTILATION: Wear approved respiratory protection when working with this material unless

ventilation is adequate to keep airborne concentrations below recommended exposure standards.

SKIN PROTECTION: Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Amber liquid
ODOR:	Moderately pungent odor
MELTING POINT:	NA
BOILING POINT:	NDA
DENSITY:	1.1401 g/ml
SOLUBILITY:	Emulsifies in water.
VAPOR PRESSURE:	NDA
DISSOCIATION CONSTANT:	NDA
OCTANOL/WATER PARTITION COEFFICIENT:	NDA
pH:	6.13 @ 27°C
VISCOSITY:	46.1cps @ 22°C, 28.1 cps @ 41°C (159 SUS @ 100°F)
CORROSION CHARACTERISTICS:	NDA

SECTION 10: STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable.

INCOMPATIBILITY: NDA

IMPACT EXPLODABILITY: NDA

OXIDATION/REDUCTION PROPERTIES: No reaction with oxidizing (1% KMnO₄) or reducing (Zinc) agents.

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE (Product Specific Information):

Eye Irritation: Eye irritation tests produced reversible slight to severe ocular effects which cleared within 7 days. (Toxicity Category III)

Skin Irritation: Skin irritation tests produced reversible slight to moderate irritation which cleared in 7 days. (Toxicity Category IV)

Dermal Toxicity: The dermal LD₅₀ in rabbits is > 5 g/kg. (Toxicity Category IV)

Oral Toxicity: The oral LD₅₀ in male rats is 2810 mg/kg. The oral LD₅₀ in female rats is 1340

mg/kg. (Toxicity Category III).

Inhalation Toxicity: The 4-hour LC₅₀ in rats is greater than 11.4 mg/l. (Toxicity Category IV).

Skin Sensitization: This product did not produce a skin sensitization reaction in guinea pigs using the Modified Buehler technique.

TOXICITY OF THIOBENCARB

SUBCHRONIC: The dermal administration of Bolero 8 EC to rats, six hours per day, five days per week for three weeks, at doses up to 500 mg/kg/day caused reduced body weight gains, body weight and food efficiency. Slight increases in red, dry and flaky skin were observed. The LOEL was 40 mg/kg/day. An eight week dietary range-finding study in rats with Bolero (94% thiobencarb technical) at doses up to 450 mg/kg/day produced effects consistent with poor palatability (taste) such as weight loss, decreased food consumption, etc. In a 4-week oral toxicity study with thiobencarb technical in dogs with doses of 1, 4, 16 and 64 mg/kg/day, the primary observation was decreased plasma cholinesterase values in the 16 and 64 mg/kg/day dose groups

NEUROTOXICITY: Based on acute and subchronic (13-week) studies in rats, thiobencarb technical is not expected to be neurotoxic. The systemic and neurobehavioral NOEL in the rat acute study was 100 mg/kg based on increased clinical signs and gait abnormalities, decreased sensory responses, decreased body temperature and decreased motor activity. In the subchronic study, the systemic NOEL was 2 mg/kg/day based on increased clinical signs, decreased body weights, and increased liver and kidney weights. The neurotoxicity NOEL was \geq 100 mg/kg/day, the highest dose tested.

CHRONIC/CARCINOGENICITY: Prolonged administration of the active ingredient thiobencarb technical to rats, mice and dogs did not increase their incidence of cancer over that of untreated animals. The primary significant findings were generally attributable to the poor palatability of the diet (e.g. weight loss). The 2 year mouse oncogenicity study demonstrated no oncogenic potential. The systemic NOEL was 3 mg/kg/day for males and 5 mg/kg/day for females based on histopathological changes in the liver. The 2-year rat oncogenicity study showed no carcinogenicity at 25 mg/kg/day and a systemic NOEL of 1 mg/kg/day based on decreased body weight gain, food consumption and efficiency and increased blood urea nitrogen. A 1-year dog study showed a systemic NOEL of 8 mg/kg/day based on decreased body weight gain, increased liver and kidney weights, and hematological and clinical chemistry changes, and a plasma cholinesterase NOEL of 1 mg/kg/day.

TERATOLOGY/DEVELOPMENTAL TOXICITY: Thiobencarb technical did not cause birth defects when tested in experimental animals. Teratology studies conducted in rats with 5, 25 and 150 mg/kg for gestation days 6 to 19 show no teratogenic effects at any dose level. Treatment with 150 mg/kg did, however, result in reduced maternal body weight gain and in reduced fetal weights. The maternal and developmental NOELs are 25 mg/kg/day. A teratology study was also conducted in rabbits at dose levels of 2, 20 and 100 mg/kg/day for the day 7-29 gestation period. Maternal body weight gain and mean fetal weights were reduced at 20 and 100 mg/kg/day dose levels, but there were no teratogenic effects. Shortening the treatment period in rabbits to gestation day 6 - 18 reduced maternal and fetal toxicity. Treatment with 20, 100 and 200 mg/kg/day produced no fetal toxicity, teratogenicity or significant maternal effects. Therefore, the maternal NOEL is 100 mg/kg/day and the developmental NOEL is 200 mg/kg/day (the highest dose tested).

REPRODUCTION: Two generation reproduction studies conducted with thiobencarb technical in rats at dose levels ranging from 2 to 100 mg/kg/day did not impair reproductive performance. Relative and absolute liver and kidney weights were increased in both F0 and F1 generations at 20 and 100 mg/kg/day. Decreased body weight gain was observed at 100 mg/kg/day in both generations of the male and in the F1 female generation. The reproductive toxicity NOEL was 100 mg/kg/day.

MUTAGENICITY: Thiobencarb technical is not expected to pose a genetic hazard. It has been studied in *in vitro* assays for gene mutation, structural chromosome aberrations and DNA damage/repair as well as *in vivo* assays measuring micronucleus formation and in the dominant lethal assay. The results for all tests except the *in vivo* micronucleus test were negative. This single report of a positive response is not cause for concern when evaluated in the context of the oncogenicity, teratogenicity and reproductive toxicity studies.

TOXICITY OF OTHER INGREDIENTS: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Symptoms reported include fatigue, concentration difficulties, anxiety, depression, rapid mood swings, and short-term memory loss. The reports are not clear with regard to the types of solvents that may cause these symptoms, and there is controversy among scientists with regard to whether the condition exists or is caused by this type of product. Since many other diseases cause some or all of these conditions, a doctor should be consulted if any appear.

A component of this product may contain trace amounts of ethylene oxide that could accumulate in the headspace of storage and transport vessels. Repeated or prolonged airborne exposures may be harmful since ethylene oxide is a cancer and reproductive system hazard.

For a summary of the potential for adverse health effects from exposure to this product, refer to Section 3. For information regarding regulations pertaining to this product, refer to Section 15.

SECTION 12: ECOLOGICAL INFORMATION

The following studies were conducted with thiobencarb technical.

AVIAN TOXICITY: Thiobencarb technical is practically nontoxic to birds. Test results include:

Oral LD₅₀ Northern bobwhite: >1938 mg/kg
Oral LC₅₀ (feeding for 8 weeks) Northern bobwhite: >5620 ppm
Oral LC₅₀ (feeding for 5 days) Mallard duck: >5000 ppm

Reproduction (Northern bobwhite): NOEC: 267 ppm; LOEC: 930 ppm
Reproduction (Mallard duck): NOEC: 100 ppm; LOEC: 300 ppm

AQUATIC ORGANISM TOXICITY:

Freshwater species: Thiobencarb technical is moderately to highly toxic to freshwater fish and invertebrates. Studies with the technical material and the formulated product show that the LC₅₀'s were generally greater than 1 ppm. The following LC₅₀ values summarize the acute toxicity findings for Bolero 8 EC.

Bluegill sunfish: 1.7 ppm
Rainbow trout: 1.1 ppm
Channel catfish: 2.3 ppm
Daphnid: 0.17 ppm
Scud Gammarus: 1.0 ppm
Apple snail: 1.85 ppm

Thiobencarb technical can inhibit the reproduction in freshwater invertebrates (Daphnid) at concentrations as low as 3.0 µg/L.

Marine/estuarine species: Thiobencarb technical and Bolero 8 EC are moderately to highly acutely toxic to marine/estuarine fish and invertebrates.

OTHER NON-TARGET ORGANISM TOXICITY: Exposure to non-target organisms such as honey bees is not expected under normal use conditions.

SECTION 13: DISPOSAL CONSIDERATIONS

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.

DISPOSAL METHODS: Do not contaminate water, food or feed by storage, disposal or cleaning of equipment. Open dumping is prohibited. Dispose in accordance with applicable laws and regulations.

SECTION 14: TRANSPORT INFORMATION

D.O.T. SHIPPING NAME:	Compounds, weed killing, liquid, non-regulated
TECHNICAL SHIPPING NAME:	Thiobencarb 84% Solution
RQ:	2,197 gallons
D.O.T. HAZARD CLASS:	NA
U.N./N.A. NUMBER:	NA
REMARKS:	Regulated when shipped in bulk (>119 gal.)
EXCEPTION REQUIREMENT:	49 CFR 173.150

SECTION 15: REGULATORY INFORMATION

REGULATIONS UNDER FIFRA: All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

OTHER U.S. FEDERAL REGULATIONS:

CERCLA RQ*:	Product RQ 2,197 gallons, Naphthalene RQ 100 lb.
RCRA**:	NA
SARA Title III:	
SARA 311 CATEGORIES:	<ol style="list-style-type: none">1. Immediate (Acute) Health Effects; YES2. Delayed (Chronic) Health Effect; YES3. Fire Hazard; YES4. Sudden Release of Pressure Hazard; NO5. Reactivity Hazard; NA

