Material Safety Data Sheet

BOLERO® 15 G

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, and 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.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: BOLERO® 15 G
VC NUMBER(S): 1249, 1250 and 1300
ITEM: 86790
SYNONYM(S): None
EPA REGISTRATION NUMBER: 59639-112

MANUFACTURER/DISTRIBUTOR
VALENT U.S.A. CORPORATION
P.O. Box 8025
1600 Riviera Avenue, Suite 200
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) 682-5368

The current MSDS is available through our website or by calling the product information numbers listed above. (www.valent.com)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Weight/ Percent	ACGIH Exposure Limits	OSHA Exposure Limits	Manufacturer's Exposure Limits
Quartz (crystalline silica) (14808-60-7)	0 - 9	0.025 mg/m³ TWA	(10)/(%SiO2 + 2) mg/m³ TWA (250)/(%SiO2 + 5) mppcf TWA (30)/(%SiO2 + 2) mg/m³ TWA	See regulated exposure limits
Others ** (No CAS#)	0 -5	None	None	None
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate) * (28249-77-6)	14 - 17	None	None	See regulated exposure limits
Hydrated amorphous silica (7631-86-9)	80 - 90	10 mg/m³ (total amorphous dust); 3 mg/m³ (respirable nuisance particulate)	6 mg/m³ (total dust)	See regulated exposure limits

* 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 identities are 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 **(800) 892-0099** at any time.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

- Causes eye irritation.
- Avoid contact with eyes, skin and clothing.
- Avoid breathing vapors.
- Keep out of reach of children.

POTENTIAL HEALTH EFFECTS

Acute Toxicity (Primary Routes of Exposure)

Signs and Symptoms of Systemic Effects: Exposure to high oral or dermal doses produced only minimal signs (irregular gait and poor general appearance) of toxicity in laboratory animals.

Acute Eye Contact: This product can cause brief and/or minor eye irritation. The expected adverse health effects resulting from an exposure may include redness and possible swelling.

Acute Skin Contact: This product can cause brief and/or minor irritation. The expected adverse health effects resulting from an exposure may include redness and possibly some minor swelling. This product is minimally toxic when absorbed through the skin. This product is not expected to cause allergic skin reactions.

Acute Ingestion: This product is minimally toxic when ingested.

Acute Inhalation: This product is minimally toxic when inhaled.

Breathing the dust at concentrations that exceed the recommended exposure standard may be irritating to the respiratory tract. Signs and symptoms of over-exposure may include coughing, shortness of breath, bronchial irritation, chest discomfort and reduced pulmonary function. Exposure to excessive levels of free crystalline silica dust for many years can result in a lung disease called silicosis.

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 material contains a small amount of crystalline silica. Repeated inhalation of large amounts of silica dust over an extended period of time may result in a progressive, disabling disease, silicosis. The International Agency for Research on Cancer (IARC) has determined that respirable crystalline silica is carcinogenic to humans. The National Toxicology Program (NTP) classifies respirable crystalline silica as a known carcinogen.

Developmental Toxicity (birth defects): No developmental toxicity was produced in animals exposed to thiobencarb technical, even at doses that were toxic to the pregnant animal.

Reproductive Toxicity: Thiobencarb technical did not produce reproductive toxicity in animal studies.

Potentially Aggravated Medical Conditions: None known

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

4. FIRST AID MEASURES

EMERGENCY NUMBER (800) 892-0099

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact **1-800-892-0099** for emergency medical treatment information.

EYE CONTACT:
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 poison control center or doctor for treatment advice.

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.

INGESTION:
Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

INHALATION:
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

NOTES TO PHYSICIAN:
None

5. FIRE FIGHTING MEASURES

FLASH POINT: Not applicable
FLAMMABLE LIMITS IN AIR - LOWER (%): No data available
FLAMMABLE LIMITS IN AIR - UPPER (%): No data available

NFPA RATING:

Health:	1
Flammability:	1
Reactivity:	0
Special:	None

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using professional judgement. Values were not available in the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

HAZARDOUS COMBUSTION PRODUCTS: Normal combustion forms carbon dioxide, water vapor and may produce: Oxides of sulfur, Nitrogen compounds. Toxic chlorine compounds. Incomplete combustion can produce carbon monoxide.

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 additional spill response information refer to the North American Emergency Response Guidebook.

FOR SPILLS ON LAND:
CONTAINMENT: Reduce airborne dust. Avoid runoff into storm sewers or other bodies of water.

CLEANUP: Clean up spill immediately. Vacuum or sweep up material and 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 is insoluble in water. This material will sink to the bottom. Stop or reduce contamination of any water. Isolate contaminated water.

CLEANUP: Remove contaminated water for treatment or disposal.

7. HANDLING AND STORAGE

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

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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

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

RESPIRATORY PROTECTION: Use this material only in well ventilated areas. Unless ventilation is adequate to keep airborne concentrations below recommended exposure standards, approved respiratory protection should be worn.

SKIN PROTECTION: Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

EXPOSURE LIMITS - See Section 2.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Free-flowing granules
COLOR:	Tan
ODOR:	No data available
MELTING POINT:	Not applicable
BOILING POINT:	Not applicable
BULK DENSITY:	0.754 g/mL = 47.0 lb/cu ft
pH:	7.7 at 25°C (1% suspension)
VISCOSITY:	Not applicable
CORROSION CHARACTERISTICS:	No data available
SOLUBILITY:	Dispersible in water

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:	Stable. Avoid high temperatures.
INCOMPATABILITY:	Not determined
OXIDATION/REDUCTION PROPERTIES:	Not reactive with water, monoammonium phosphate, zinc, and potassium permanganate.
EXPLODABILITY:	Not expected to be explosive.
HAZARDOUS DECOMPOSITION PRODUCTS:	No data available

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Oral Toxicity LD_{50} (rats)	Not available	EPA Tox Category	Not available
Dermal Toxicity LD_{50} (rabbits)	Not available	EPA Tox Category	Not available
Inhalation Toxicity LC_{50} (rats)	Not available	EPA Tox Category	Not available
Eye Irritation (rabbits)	Not available	EPA Tox Category	Not available
Skin Irritation (rabbits)	Not available	EPA Tox Category	Not available
Skin Sensitization (guinea pigs)	Not available	EPA Tox Category	Not available

TOXICITY OF THIOBENCARB TECHNICAL

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 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

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.

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 > 100 mg/kg/day, the highest dose tested.

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:
This product contains crystalline silica. Repeated inhalation of the dust may cause insidious lung injury and possibly silicosis. In patients with silicosis, areas of the lung become filled with scar tissue. The signs and symptoms may include cough, shortness of breath, difficulty in breathing, and loss of weight. The disease can progressively worsen and result in death. In their Monograph - Volume 42, the International Agency for Research on cancer (IARC) classified crystalline silica as a probable human carcinogen. Users of this product should confirm that their operating, storage, and distribution facilities comply with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for all materials containing more than 0.1% crystalline silica. Employee exposures to airborne crystalline silica dust should be controlled to below the OSHA 8 hour PEL for the particular type of crystalline silica present.

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.

12. ECOLOGICAL INFORMATION

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 of non-target organisms such as honey bees is not expected under normal use conditions of products containing Thiobencarb Technical.

13. DISPOSAL CONSIDERATIONS

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

DISPOSAL METHODS: Check government regulations and local authorities for approved disposal of this material. Dispose in accordance with applicable laws and regulations.

14. TRANSPORT INFORMATION

DOT (ground) SHIPPING NAME: Compounds, weed killing, dry, non-regulated
DOT TECHNICAL SHIPPING NAME: Thiobencarb 16.2% Granules
DOT REPORTABLE QUANTITY (RQ): Not applicable
UN/NA NUMBER: Not applicable
HAZARD CLASS: Not applicable
REMARKS: None
EXEMPTION REQUIREMENT: None

15. REGULATORY INFORMATION

PESTICIDE REGULATIONS: 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.

U.S. FEDERAL REGULATIONS:

Chemical Name	RCRA - U Series Wastes	Clean Water Act - Hazardous Substances	Clean Water Act Section 307
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate) * (28249-77-6)	None	Not listed	Not listed
Hydrated amorphous silica (7631-86-9)	None	Not listed	Not listed
Quartz (crystalline silica) (14808-60-7)	None	Not listed	Not listed

CWA Section 311: No data

Chemical Name	SARA 313 Chemicals	SARA Section 302	CERCLA Reportable Quantity (RQ):
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate) * (28249-77-6)	1.0% de minimis concentration	Not listed	None
Hydrated amorphous silica (7631-86-9)	Not listed	Not listed	None
Quartz (crystalline silica) (14808-60-7)	Not listed	Not listed	None

SARA (311, 312):

Immediate Health: Yes
Chronic Health: Yes
Fire: No
Sudden Pressure: No
Reactivity: No

Chemical Name	IARC - Group 1 (carcinogenic to humans)	IARC - Group 2A (Probably carcinogenic)	IARC - Group 2B (Possibly carcinogenic)	NTP Carcinogen List
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate) * (28249-77-6)	No	No	No	Not listed
Hydrated amorphous silica (7631-86-9)	No	No	No	Not listed
Quartz (crystalline silica) (14808-60-7)	Yes	No	No	Known Carcinogen

STATE REGULATIONS:
Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list of all state regulations. Therefore, the user should consult state or local authorities. The state regulations reviewed include: California Proposition 65, California Directors List of Hazardous Substances, Massachusetts Right to Know, Michigan Critical Materials List, New Jersey Right to Know, Pennsylvania Right to Know, Rhode Island Right to Know and the Minnesota Hazardous Substance list. For Washington State Right to Know, see Section 2 for Exposure Limit information. For Louisiana Right to Know refer to SARA information listed under U.S. Regulations above.

Chemical Name	California Proposition 65	California - Directors List of Hazardous Substances
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate) * (28249-77-6)	Not listed	Listed
Hydrated amorphous silica (7631-86-9)	Not listed	Listed
Quartz (crystalline silica) (14808-60-7)	carcinogen, initial date 10/1/88 (airborne particles of respirable size)	Not listed

Chemical Name	MI - Critical Materials List	MA Right To Know	NJ Right To Know
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate) * (28249-77-6)	Not listed	Not listed	Listed
Hydrated amorphous silica (7631-86-9)	Not listed	Listed	Listed
Quartz (crystalline silica) (14808-60-7)	Not listed	Listed	Listed

Chemical Name	PA Right To Know	RI Right To Know	MN Hazardous Substance
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate) * (28249-77-6)	Not listed	Not listed	Not listed
Hydrated amorphous silica (7631-86-9)	Listed	Not listed	Listed
Quartz (crystalline silica) (14808-60-7)	Listed	Listed	Listed

California Proposition 65: WARNING: This product contains a chemical known to the State of California to cause cancer.

CANADIAN REGULATIONS:

WHMIS Hazard Class: Not determined

For information regarding potential adverse health effects from exposure to this product, refer to Sections 3 and 11.

16. OTHER INFORMATION

REASON FOR ISSUE: Minor correction to Section 6.
MSDS NO.: 0074
EPA REGISTRATION NUMBER: 59639-112
REVISION NUMBER: 2
REVISION DATE: 05/02/2008
SUPERCEDES DATE: October 30, 2001
RESPONSIBLE PERSON(S): Valent U.S.A. Corporation, Corporate EH&S, (925) 256-2803

THE INFORMATION IN THIS MSDS IS BASED ON DATA AVAILABLE TO US AS OF THE REVISION DATE GIVEN HEREIN, AND BELIEVED TO BE CORRECT. CONTACT VALENT U.S.A . CORPORATON TO CONFIRM IF YOU HAVE THE MOST CURRENT MSDS.

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