

# ENERGY CONTROL II®

## Cellulose Insulation

### MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: June 15, 1996

REVIEW 2ND RENEWAL DATE: September 2, 2009

### CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: ENERGY CONTROL II® INSULATION

Chemical Formula:  $(C_1H_{15}O_5) \cdot Na_2SO_4 \cdot H_3BO_3 + (NH_4)_2SO_4 + Ca(OH)_2MgO$

Chemical Name/Synonyms: Cellulose Insulation

Chemical Family: Cellulose Treated With Inorganic Salts

CAS Registry Number: Not Established

TSCA Inventory Number: Not listed

MANUFACTURER: Energy Control, Inc.

804 West Mill Street

Ossian, IN 46777

**EMERGENCY PHONE NUMBER:**

Energy Control, Inc. 800-451-6429

ENERGY CONTROL II® INSULATION is a registered trademark of Energy Control, Inc.

### COMPOSITION/INFORMATION ON INGREDIENTS OSHA HAZARDS

This product contains less than 99 percent (%) ammonium sulfate  $(NH_4)_2SO_4$  CAS No. 7783-20-2 and boric acid  $(H_3BO_3)$  CAS No. 10043-35-3. Ammonium sulfate and boric acid are hazardous under the OSHA Hazard Communication Standard based on animal chronic toxicity studies.

### HAZARD IDENTIFICATION

#### EMERGENCY OVERVIEW:

ENERGY CONTROL II® INSULATION is a gray, odorless wood fiber insulation material. The product is not flammable, combustible, or explosive, and it presents no unusual hazard if involved in a fire. Care should be taken to minimize the amount of ENERGY CONTROL II® INSULATION released to the environment to avoid ecological effects.

#### POTENTIAL ECOLOGICAL EFFECTS:

Large amounts of ENERGY CONTROL II® INSULATION can be harmful to boron and/or ammonium-sensitive plants and other ecological systems.

#### POTENTIAL HEALTH EFFECTS:

**Routes of Exposure:** Inhalation is the most significant route of exposure in occupational and other settings. This product does contain ammonium sulfate which can be absorbed by eye or skin contact.

**Inhalation:** Mild irritation of nose and throat may occur from inhalation of ENERGY CONTROL II® INSULATION dusts at levels greater than 10 mg/m<sup>3</sup>.

**Eye Contact:** ENERGY CONTROL II® INSULATION may cause moderate irritation to eyes during application.

**Skin Contact:** ENERGY CONTROL II® INSULATION may cause mild skin irritation.

**Ingestion:** ENERGY CONTROL II® INSULATION is not intended for ingestion. Small amounts (e.g. 3 teaspoonfuls) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms.

**Cancer:** ENERGY CONTROL II® INSULATION is not considered a carcinogen.

**Reproductive:** Long-term, high dose animal ingestion studies of similar inorganic borate chemicals at significantly higher concentrations have demonstrated reproductive effects in male animals. A human study of occupational exposure to borate dust showed no adverse effect to reproduction.

**Developmental:** High dose animal ingestion studies of similar inorganic borate chemicals at significantly higher concentrations have demonstrated developmental effects in fetuses of pregnant animals, including fetal weight loss.

**Target Organs:** No target organ has been identified in humans for boric acid. High dose animal ingestion studies of similar inorganic borate chemicals at significantly higher concentrations indicate the testes are the target organs in male animals. If ingested, ammonium sulfate may target the gastro intestinal tract cause ulceration or hemorrhage.

**Signs and Symptoms of Exposure:** Symptoms of accidental over-exposure to borate products have been associated with ingestion or by absorption through large areas of damaged skin. These may include gastric upset, nausea, vomiting, and diarrhea, with delayed effects of skin redness and peeling. Systemic ammonia poisoning is possible if sufficient ammonia absorption occurs. Refer to Toxicology Information Section for details on Toxicological Data.

### FIRST AID MEASURES

**Inhalation:** No specific treatment is necessary since ENERGY CONTROL II® INSULATION is not likely to be hazardous by inhalation. Prolonged exposure to dust levels in excess of regulatory limits should always be avoided.

**Eye Contact:** Use eye wash fountain or fresh water to cleanse eye. If irritation persists for more than 30 minutes, seek medical attention.

**Skin Contact:** Wash affected areas with soap and water. If irritation develops, get medical attention..

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**Ingestion:** Swallowing less than one teaspoon will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

**NOTE TO PHYSICIANS:** Observation only is required for adult ingestion of a few grams of ENERGY CONTROL II® INSULATION. For ingestion in excess of larger amounts, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Hemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boron analyses of urine or blood are only useful for documenting exposure and should not be used to evaluate severity of poisoning or to guide treatment.

## FIRE FIGHTING MEASURES

**General Hazard:** None, because ENERGY CONTROL II® INSULATION is not flammable, combustible or explosive. The product itself is a flame retardant.

**Extinguishing Media:** Any fire extinguishing media may be used on nearby fires.

**Flammability Classification (29 CFR 1910, 1200):** Non-flammable solid.

## ACCIDENTAL RELEASE MEASURES

**General:** ENERGY CONTROL II® INSULATION contains water-soluble inorganic salts that may cause damage to trees or vegetation by root absorption. (Refer to Ecological information for specific information)

**Land Spill:** Vacuum, shovel or sweep up ENERGY CONTROL II® INSULATION and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during clean up and disposal. No personal protective equipment is needed to clean up land spills

**Water Spill:** ENERGY CONTROL II® INSULATION will cause localized contamination of surrounding waters depending on the quantity dissolved in these waters. At high concentrations some damage to local vegetation, fish and other aquatic life may be expected. ENERGY CONTROL II® INSULATION is a non-hazardous waste when spilled or disposed of, as defined in the Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261). (Refer to Regulatory Information for additional references and information regarding California regulations.)

## HANDLING AND STORAGE

**Storage Temperature:** Ambient

**Storage Pressure:** Atmospheric

**Special Sensitivity:** None known

**General:** No special handling precautions are required, but dry, indoor storage is recommended. To maintain package integrity, bags should be handled on a "first-in first-out" basis. Good housekeeping procedures should be followed to minimize dust generation and accumulation.

## EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls:** Use local exhaust ventilation to keep airborne concentrations of ENERGY CONTROL II® INSULATION dust below permissible exposure levels.

**Personal Protection:** Where airborne concentrations are expected to exceed exposure limits, NIOSH/MSHA certified respirators must be used. Eye goggles and gloves are not required for normal industrial exposures, but may be warranted if environment is excessively dusty.

**Occupational Exposure Limits:** ENERGY CONTROL II® INSULATION is listed/regulated by OSHA, Cal OSHA and ACGIH as "Particulate Not Otherwise Classified" or "Nuisance Dust".

OSHA: PEL*	15mg/m <sup>3</sup> total dust and 5 mg/m <sup>3</sup> respirable dust
ACGIH: TLV**	10 mg/m <sup>3</sup>
Cal OSHA: PEL*	10 mg/m <sup>3</sup>

\*PEL="Permissible Exposure Limit"

\*\*TLV-"Threshold Limit Value"

## PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Gray, odorless fiber	<b>Boiling Point:</b>	Not Applicable
<b>Specific Gravity:</b>	0.7 compressed	<b>Melting Point:</b>	Not Applicable
<b>Vapor Pressure:</b>	Negligible @ 20°C	<b>Flash Point:</b>	Not Applicable
<b>Solubility in Water:</b>	Fiber is not soluble; Chemical additive is soluble at the rate of 4.7% @ 20° C.	<b>pH:</b>	8.0 (2.0% solution @ 25°C)
		<b>Viscosity:</b>	Not Applicable

## STABILITY AND REACTIVITY

**General:** ENERGY CONTROL II® INSULATION is a stable product.

**Incompatible Materials and Conditions to Avoid:** Will react with strong reducing agents and oxidizers, bases, chlorates, and nitrates.

**Hardous Decomposition:** Ammonia and sulfur trioxide.

## TOXICOLOGICAL INFORMATION

**NOTE:** ENERGY CONTROL II® INSULATION contains 6.72% boric acid, 10.50% ammonium sulfate, and 82.78% inert wood fiber with conditioners. The boric acid data discussed in this section relates to 100% pure boric acid. Toxicology of ammonium sulfate is unknown, but considered minimal at concentrations of less than 10% in this product.

**INHALATION:** Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid dust and sodium borate dust.

**CARCINOGENICITY:** A Technical Report issued by the National Toxicology Program showed "no evidence of carcinogenicity" from a full 2-year bioassay on boric acid in mice at feed doses of 2500 and 5000 ppm in the diet. No mutagenic activity was observed for boric acid in a recent battery of four short-term mutagenicity assays.

**REPRODUCTIVE/DEVELOPMENTAL TOXICITY:** Animal studies indicate boric acid reduces or inhibits sperm production, causes testicular atrophy, and, when given to pregnant animals during gestation, may cause developmental changes. These feed studies were conducted under chronic exposure conditions leading to doses many times in excess of those that could occur through inhalation of dust in occupational settings.

**Reproductive Toxicity (Fertility):** Dietary boric acid levels of 6,700 ppm in chronic feeding studies in rats and dogs produced testicular atrophy, while dogs and rats receiving 2000 ppm did not develop testicular changes (<sup>1</sup>Weir, Fisher, 1972). In chronic feeding studies of mice on diets containing 5000 ppm (550 mg/kg/d) boric acid, testicular atrophy was present while mice fed 2500 ppm (275 mg/kg/d) boric acid showed no significant increase in testicular atrophy (<sup>2</sup>NTP, 1987). In another boric acid chronic study, in mice given 4500 ppm (636mg/kg/d), degeneration of seminiferous tubules was present together with a reduction of germ cells, while at 1000 ppm (152 mg/kg/d) no effect was seen (<sup>3</sup>Fail et al., 1991). In a reproduction study on rats, 2000 ppm of dietary boric acid had no adverse effect on lactation, litter size, weight and appearance (<sup>1</sup>Weir, Fisher, 1972). In a continuous breeding study in mice there was reduction in fertility rates for males receiving 4500 ppm (636 mg/kg/d) boric acid, but not for females receiving 4500 ppm boric acid (<sup>3</sup>Fail et al., 1991).

**Developmental Toxicity:** Boric acid at dietary levels of 1000 ppm (78 mg/kg/d) administered to pregnant female rats throughout gestation caused a slight reduction in fetal weight, but was considered to be close to the NOAEL. Doses of 2000 ppm (163 mg/kg/d) and above caused fetal malformations and maternal toxicity. In mice the no effect level for fetal weight reduction and maternal toxicity was 1000 ppm (248 mg/kg/d) boric acid. Fetal weight loss was noted at dietary boric acid levels of 2000 ppm (452 mg/kg/d) and above. Malformations (ageneses or shortening of the thirteenth rib) were seen at 4000 ppm (1003 mg/kg/d), (<sup>4</sup>Heindel et al., 1992).

<sup>1</sup> (Weir, R.J. and Fisher, R.S., Toxicol. Appl. Pharmacol., 23:351-364 (1974))

<sup>2</sup> (National Toxicology Program (NTP)-Technical Report Series No. TR324, NIH Publication NO. 88-2580 (1987), PB88-213475/XAB)

<sup>3</sup> (Fail et al., Fund. Appl. Toxicol. 17, 225-239 (1991))

<sup>4</sup> (Heindel et al., Fund Appl. Toxicol. 18, 266-277 (1992))

## ECOLOGICAL INFORMATION

### ECOTOXICITY DATA:

**Phytotoxicity:** Although boron and ammonia are essential micronutrients for healthy growth of boron and/or ammonia-sensitive plants, these components can be harmful to plants in higher quantities. Plants and trees can easily be exposed by root absorption to toxic levels of boron and/or ammonia in the form of water-soluble salt leached into nearby soil or waters. Care should be taken to minimize the amount of borate and ammonia-based product released to the environment.

**Fish Toxicity:** Boron naturally occurs in sea water at an average concentration of 5 mg B/liter. In laboratory studies the acute toxicity (96-hr LC<sub>50</sub>) for under-yearling Coho salmon (O<sub>2</sub>Pest Control/horhynchus kisutch) in sea water was determined as 40 mg B/L (added as sodium metaborate). Boron concentrations in fresh surface waters are generally less than 1 mg B/L. Laboratory studies on the toxicity of freshwater fish were determined using early life (embryo-larval) stages in natural water and boric acid as a test substance. The results were:

Rainbow Trout ( <i>S. gairdneri</i> )
24-day LC <sub>50</sub> =150.0 mg B/L
36-day NOEC•LOEC=0.75-1 mg B/L
Goldfish ( <i>Carassius auratus</i> )
7-day NOEC•LOEC=26.50 mg B/L
3-day LC <sub>50</sub> =178 mg B/L

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**Invertebrate Toxicity:** The acute toxicity (48-hour LC<sub>50</sub>) to Daphnids (*Daphnia magna* Straus) in natural water is reported to be 133 mg B/L (added as boric acid). Estimated chronic toxicity (21-day NOEC•LOEC) values of 6-13 mg B/L (added as boric acid) have also been reported.

### ENVIRONMENTAL FATE DATA:

**Persistence/Degradation:** Boron is naturally occurring and ubiquitous in the environment. Boric acid decomposes in the environment to natural borate.

**Soil Mobility:** The boric acid and ammonium sulfate additives in ENERGY CONTROL II® INSULATION are soluble in water and are leachable through normal soil.

NOTE: Boron (B) is the element in ENERGY CONTROL II® INSULATION which is used to characterize borate ecological effects. To convert ENERGY CONTROL II® INSULATION data to Boron (B), multiply by 0.0118.

## DISPOSAL CONSIDERATIONS

**Disposal Guidance:** Small quantities of ENERGY CONTROL II® INSULATION can usually be disposed of at Municipal Landfill sites. No special disposal treatment is required, but refer to state and local regulations for applicable site-specific requirements. Tonnage quantities of product are not recommended to be sent to landfills. Such product should, if possible, be re-used for an appropriate application.

**RCRA (40 CFR 261):** ENERGY CONTROL II® INSULATION is not listed under any sections of the Federal Resource Conservation and Recovery Act (RCRA).

## TRANSPORT INFORMATION

**DOT Hazardous Material Classification:** ENERGY CONTROL II® INSULATION is not a U.S. Department of Transportation (DOT) Hazardous Material.

**DOT Hazardous Substance Classification:** ENERGY CONTROL II® INSULATION is not a DOT Hazardous Substance.

**International Transportation:** ENERGY CONTROL II® INSULATION has no U.N. Number, and is not regulated under international rail, highway, water, or air transport regulations.

## REGULATORY INFORMATION

**TSCA No.:** ENERGY CONTROL II® INSULATION does not appear on the EPA TSCA inventory list. Ammonium sulfate and boric acid appear on the EPA TSCA inventory list under the CAS Nos. 7783-20-2 and 10043-35-3 respectively.

**RCRA:** ENERGY CONTROL II® INSULATION is not listed as a hazardous waste under any sections of the Resource Conservation and Recovery Act or regulations (40) CFR 261 et seq.).

**Superfund:** CERCLA/SARA. ENERGY CONTROL II® INSULATION is not listed under CERCLA (the Comprehensive Environmental Response Compensation and Liability Act) or its 1986 amendments, SARA, (the Superfund Amendments and Reauthorization Act), including substances listed under Section 313 of SARA, Toxic Chemicals, 42 USC 11023, 40 CFR 372.65; Section 302 of SARA, Extremely Hazardous Substances, 42 USC 11002, 40 CFR 355; or the CERCLA Hazardous Substances list, 42 USC 9604, 40 CFR 302.

**Safe Drinking Water Act:** ENERGY CONTROL II® INSULATION is not regulated under the SDWA, 42 USC 300g-1, 40 CFR 141 et seq. Consult state and local regulations for possible water quality advisories regarding boron and ammonia.

**Clean Water Act (Federal Water Pollution Control Act):** 33 USC 1251 et seq.

a.) ENERGY CONTROL II® INSULATION is not itself a discharge covered by any water quality criteria of Section 304 of the CWA, 33 USC 1314.

b.) It is not on the Section 307 List of Priority Pollutants, 33 USC 1317, 40 CFR 129

c.) It is not on the Section 311 List of Hazardous Substances, 33 USC 1321, 40 CFR 116.

**OSHA/Cal OSHA:** This MSDS document meets the requirements of both OSHA (29 CFR 1910.1200) and Cal OSHA (Title 8 CCR 5194(g)) hazard communication standards. Refer to Exposure Control/Personal Protection for regulatory exposure limits.

**IARC:** The International Agency for Research on Cancer (of the World Health Organization) does not list or categorize ENERGY CONTROL II® INSULATION as a carcinogen.

**NTP Annual Report on Carcinogens:** ENERGY CONTROL II® INSULATION is not listed.

**OSHA Carcinogen:** ENERGY CONTROL II® INSULATION is not listed.

**California Proposition 65:** ENERGY CONTROL II® INSULATION is not listed on any Proposition 65 lists of carcinogens or reproductive toxicants.

## OTHER INFORMATION

**National Fire Protection Association (NFPA) Classification:**

Health - 0, Flammability - 0, Reactivity 0\*

**Hazardous Materials Information Systems (HMIS):**

Red: (Flammability) - 0, Yellow: (Reactivity) - 0, Blue: (Acute Health) - 1\*

\*Chronic Effects