

MATERIAL SAFETY DATA SHEET

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SECTION I

Date of Preparation: December, 2000 Rev May, 2004

PRODUCT NAME: Flex-Guard250
PRODUCT CLASS: Epoxy Resin, Part A
PRODUCT TYPE: Bisphenol F/Epichlorohydrin Resin

D.O.T. CATEGORY: Chemical, NOIBN

MANUFACTURER: Environmental Coatings
4702 E. Virginia Street.
Mesa, Arizona 85215

TELEPHONE: 1-480-984-7608
EMERGENCY: 1-800/535-5053 INFOTRAC

SECTION II - INGREDIENTS

100% Bisphenol F/Epichlorohydrin Epoxy Resin CASNO. 28064-14-4

SECTION III - HEALTH INFORMATION

The health effects noted below are consistent with requirements under the OSHA hazard Communication Standard (29CFR 1910.1200).

EYE CONTACT: Product may be moderately irritating to the eyes.

SKIN CONTACT: Product may be moderately irritating to the skin and may cause skin sensitization.

INHALATION: Not expected to be a relevant route of exposure. However, high vapor or aerosol mist concentrations may be irritating to the nose, throat and upper respiratory tract.

INGESTION: Not expected to be a relevant route of exposure. However, product is predicted to have a low order of acute oral toxicity.

SIGNS AND SYMPTOMS: Irritation as noted. Skin sensitization (allergy) may be evidenced by rash, especially hives.

AGGRAVATED MEDICAL CONDITIONS: Preexisting skin, eye and respiratory disorders may be aggravated by exposure to the product.

SECTION IV - OCCUPATIONAL EXPOSURE LIMITS

No OSHA or ACGIH limits have been established for this product.

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SECTION V - EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:

Flush eyes with plenty of water for 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT:

Remove contaminated clothing/shoes and wipe excess from skin. Flush skin with water. Follow by washing with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned. Contaminated leather articles, including shoes, cannot be decontaminated and should be destroyed to prevent use.

INHALATION:

Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

INGESTION:

Do not induce vomiting. In general, no treatment is necessary unless large quantities of product are ingested. However, get medical advice.

NOTE TO PHYSICIAN:

In general, emesis induction is unnecessary in high viscosity, low volatility products, e.g. neat epoxy resins.

SECTION VI - SUPPLEMENTAL HEALTH INFORMATION

Epichlorohydrin, an impurity in this product (<50 ppm), has been reported to product cancer in laboratory animals and to product mutagenic changes in bacteria and cultured human cells. It has been established by the International Agency for Research on Cancer (IARC) as a probable human carcinogen (IARC Group 2A) based on the following conclusions: Human evidence - inadequate; animal evidence - sufficient. It has been classified as an anticipated human carcinogen by the National Toxicology Program (NTP).

SECTION VII - PHYSICAL DATA

BOILING POINT: N/A

SPECIFIC GRAVITY: 1.2

VAPOR PRESSURE: N/A

MELTING POINT: N/A

SOLUBILITY IN WATER: Negligible

APPEARANCE AND ODOR: Light yellow, Viscous liquid.

EVAPORATION RATE: N/A

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SECTION VIII – FIRE AND EXPLOSION HAZARDS

FLASH POINT: >200° F. (Pensky Martin Closed Cup)

EXTINGUISHING MEDIA: Use water fog, alcohol foam, dry chemical or CO₂.

SPECIAL FIRE FIGHTING PROCEDURES: Material will not burn unless preheated. Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves and rubber boots), including a positive pressure NIOSH approved self-contained breathing apparatus. Cool fire exposed containers with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION IX - REACTIVITY DATA

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS AND MATERIALS TO AVOID: Can react vigorously with strong oxidizing agents, strong Lewis or mineral acids, and strong mineral and organic bases/especially primary and secondary aliphatic amines.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, aldehydes, acids, and other organic substances may be formed during thermal and oxidative decomposition. Reaction with some curing agents may produce considerable heat. Run-a-way cure reactions may char and decompose the resin system, generating unidentified fumes and vapors, which may be toxic.

SECTION X - EMPLOYEE PROTECTION

RESPIRATORY PROTECTION: Not ordinarily required.

PROTECTIVE CLOTHING: Avoid contact with eyes. Wear safety glasses or goggles as appropriate. Avoid prolonged or repeated contact with skin. Wear chemical-resistant gloves and other clothing as required to minimize contact.

ADDITIONAL PROTECTIVE MEASURES: None.

SECTION XI – ENVIRONMENTAL PROCEDURES

SPILL OR LEAK PROCEDURES:

May burn although not readily ignitable. Use cautious judgement with cleaning up large spills. LARGE SPILLS - Wear respirator and protective clothing as appropriate. Shut off source of leak, if safe to do so. Dike and contain. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material; dispose of properly. Flush area with water to remove trace residue.

SMALL SPILLS - Take up with an absorbent material and dispose of properly.

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SECTION XII - SPECIAL PRECAUTIONS

Store in cool, dry place. Keep away from open flames and high temperatures. Containers, even those that have been emptied, may contain hazardous residues. Handle in accordance with the hazard potential of curing agents used. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Launder contaminated clothing before reusing. Contaminated leather articles, including shoes, cannot be decontaminated and should be destroyed to prevent reuse.

Warning! May cause skin and eye irritation. May cause skin sensitization. Minimize bodily contact. Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities.

Heating this resin above 300 deg. F. in the presence of air may cause slow oxidative decomposition; above 500 deg. F., polymerization may occur. Some curing agents, e.g., aliphatic polyamines can product exothermic reactions which in large masses can cause runaway polymerization and charring of the reactants. Fumes and vapors from these thermal and chemical decompositions vary widely in composition and toxicity. Do not breathe fumes. Use a NIOSH-approved respirator as required to prevent over exposure. In accord with 29 CFR 1910.134, use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.

SECTION XIII - TRANSPORTATION INFORMATION

Department of Transportation Classification: Not Hazardous by D.O.T. Regulations

D.O.T. Proper Shipping Name: None

SECTION XIV - OTHER REGULATORY CONTROLS

This product is listed on the EPA/TSCA inventory of chemical substances.

Protection of Stratospheric Ozone (Pursuant to Section 611 of the clean air act amendments of 1990): Per 40 CFR Part 82. This product does not contain nor was it directly manufactured with any Class I or Class II ozone-depleting substances.

SECTION XV - STATE REGULATORY INFORMATION

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for State requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

STATE LISTED COMPONENT	CAS No.	Percent	State Code
Epichlorohydrin ,CA65C/R	106-89-8	<50 ppm	MA, PA, RI

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CA = California Hazardous Substance List; CA65C, CA65R = California Safe Drinking Water and Toxics Enforcement Act of 1986 or Proposition 65 List; MA = Massachusetts Subs. List, PA = Pennsylvania Haz. Subst. List, RI = Rhode Island Haz. Subst. List.

PROPOSITION 65 Footnote: CA65C – The chemical identified with this code is known to the State of California to cause birth defects or other reproductive harm. CA65C/R – The chemical identified with this code is known to the State of California to cause both cancer and birth defects or other reproductive harm.

THE INFORMATION HEREIN RELATES TO THE PRODUCT NAMED AND IS BASED UPON INFORMATION CONSIDERED TO BE ACCURATE. NO WARRANTY EXPRESSED OR IMPLIED IS INTENDED.

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No information on this page.

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SECTION I

Date of Preparation: March, 2001 Rev May, 2004

PRODUCT NAME: Flex-Guard 250
PRODUCT CLASS: Epoxy Hardener, Part B
PRODUCT TYPE: Cycloaliphatic/Aliphatic Amine Mixture
D.O.T. CATEGORY: Not Regulated

MANUFACTURER: Environmental Coatings
1845 N. Crismon Rd.
Mesa, Arizona 85207

TELEPHONE: 1-480-984-7608
EMERGENCY: 1-800/535-5053 INFOTRAC

EMERGENCY OVERVIEW

HMIS/NFPA Health 2 Flammability 1 Reactivity 0

Physical Form: Mobile Liquid

Color: Amber

Odor: Ammoniacal

Hazards: Harmful if swallowed. Mild skin irritant, eye irritant, and respiratory irritant. May cause skin sensitization.

Extinguishing Media: Ignition will give rise to a Class B fire. In case of large fire use: alcohol foam, water spray. In case of small fire use: carbon dioxide (CO₂), dry chemical, dry sand or limestone.

SECTION II - INGREDIENTS

	<u>CASNumber</u>
< 5%	108-95-2 Phenol
< 5%	112-24-3 Triethylenetetramine
< 8%	32610-77-8 Formaldehyde Polymer with Phenol and Teta
< 40%	100-51-6 Benzyl Alcohol
< 5%	1761-71-3 4,4'-METHYLENEBISCYCLOHEXANAMINE
< 40%	Cycloaliphatic Amine
< 5%	Acid

The remaining components are trade secret.

Exposure Limits – Not Established

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SECTION III- HEALTH HAZARDS

ROUTES OF EXPOSURE:

Eye Contact
Skin Contact
Ingestion
Skin Absorption

EXPOSURE STANDARDS:

Maintain air contaminant concentrations in the workplace at the lowest feasible levels.

HEALTH HAZARDS:

Harmful if swallowed. Mild skin irritant. May cause skin sensitization. Respiratory tract irritant.

TARGET ORGANS: Eye. Skin. Respiratory System.

SIGNS AND SYMPTOMS OF EXPOSURE (Acute Effects):

Contact with the skin may cause dryness (defatting), itching and/or rash. Contact with skin causes mild irritation and discomfort. Inhalation of mists may cause irritation in the respiratory tract. Product is absorbed through the skin and may cause nausea, headache and general discomfort.

SIGNS AND SYMPTOMS OF EXPOSURE (Possible Longer Term Effects):

Repeated and/or prolonged contact with the skin may cause allergic reaction/sensitization. Repeated and/or prolonged exposures may result in: adverse eye effects (such as conjunctivitis or corneal damage), adverse skin effects (such as defatting, rash, or irritation), adverse skin effects (such as rash, irritation or corrosion). Dryness of nasal passages may be experienced when material is inhaled over a long period of time. Repeated and/or prolonged exposures may result in liver disorders (such as jaundice or liver enlargement), kidney disorders (such as edema, or proteinuria); adverse respiratory effects (such as cough, tightness of chest or shortness of breath).

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Eye disease. Skin disorders and Allergies. Asthma. Chronic Respiratory Disease (e.g Bronchitis, Emphysema). Kidney Disorders. Liver Disorders.

CARCINOGENS UNDER OSHA, ACGIH, NTP, IARC, OTHER:

This product contains no carcinogens in concentrations of 0.1 percent or greater.

SECTION IV - FIRST AID

EYE CONTACT:

Rinse immediately with plenty of water for at least 15 minutes. If irritation persists, seek medical advice.

SKIN CONTACT:

Wash affected area with soap and water. Remove contaminated clothing and shoes. Destroy contaminated leather apparel. Launder contaminated clothing prior to reuse.

INHALATION:

Move patient to fresh air. If breathing has stopped or is labored give assisted respiration (e.g mouth-to-mouth). Supplemental oxygen may be indicated. Prevent aspiration of vomit. Turn victim's head to the side. Seek medical advice.

INGESTION:

If swallowed, call a physician immediately. Remove stomach contents by gastric suction or induce vomiting only as directed by medical personnel. Never give anything by mouth to an unconscious person.

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SECTION V - FIRE AND EXPLOSION DATA

Flash Point: 219°F (Closed Cup)
Upper Explosion Limit (UEL): No Data
Lower Explosion Limit (LEL): No Data
Autoignition Temperature: No Data
Fire Hazard Classification (OSHA/NFPA): Class IIIB

EXTINGUISHING MEDIA:

Ignition will give rise to a Class B fire. In case of large fire use: Water Spray, Alcohol Foam. In case of small fire use: Carbon Dioxide (CO²), Dry Chemical, dry sand or limestone.

SPECIAL FIRE FIGHTING PROCEDURES:

Fire fighters should wear butyl rubber boots, gloves, and body suit and a self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

May generate toxic or irritating combustion products. Sudden reaction and fire may result if product is mixed with an oxidizing agent. May generate carbon monoxide gas. May generate toxic nitrogen oxide gases. May generate ammonia gas. Personnel in vicinity and downwind should be evacuated.

SECTION VI - ACCIDENTAL RELEASE MEASURES

CONTAINMENT TECHNIQUES (Removal of ignition sources, diking, etc.): Stop the leak, if possible. Reduce vapor spreading with a water spray. Shut off or removal all ignition sources. Construct a dike to prevent spreading (includes molten liquids until they freeze).

CLEAN-UP PROCEDURES: If recovery is not feasible, admix with dry soil, sand or non-reactive absorbent and place in an appropriate chemical waste containers. Transfer to containers by suction, preparatory for later disposal. Flush area with water spray. Clean up personnel must be equipped with self-contained breathing apparatus and butyl rubber protective clothing. For large spills, recover spilled material with a vacuum truck.

OTHER EMERGENCY ADVICE: Wear protective clothing, boots, gloves, and eye protection.

SECTION VII - HANDLING AND STORAGE

STORAGE:

Keep away from acids, alkalis, and oxidizers. Keep in cool, dry, ventilated storage and in closed containers. Store in steel containers, preferably located outdoors, above ground, and surrounded by dikes to contain spills or leaks. Do not store in reactive metal containers.

HANDLING:

Avoid contact with skin or eyes. When handling, do not eat, drink or smoke.

OTHER PRECAUTIONS:

Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations (e.g. OSHA). Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Cancer-causing nitrosamines could be formed.

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SECTION VIII – PERSONAL PROTECTION/EXPOSURE CONTROLS

EYE PROTECTION: Chemical safety goggles.

HAND PROTECTION: Neoprene rubber gloves. Cuffed butyl rubber gloves. Nitrile rubber gloves.

RESPIRATORY PROTECTION: Not required under normal conditions in a well-ventilated work workplace.

PROTECTIVE CLOTHING: Long sleeved clothing.

ENGINEERING CONTROLS: No specific controls needed.

WORK AND HYGIENIC PRACTICES: Provide readily accessible eye wash stations and safety showers. Wash at the end of each workshift and before eating, smoking or using the toilet. Use appropriate hand and skin lotions to protect the skin. Discard contaminated leather articles.

SECTION IX – TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM:	Mobile Liquid
Color:	Amber
Odor:	Ammoniacal
PH:	Alkaline
Vapor Pressure:	<1.0000 (mm Hg at 21C (70°F))
Vapor Density:	No Data
Boiling Point:	431 °F
Melting Point:	No Data
Solubility in Water:	Slight (0.1 – 1%)
Specific Gravity:	1.06 (water = 1)
Molecular Weight:	Mixture

SECTION X – STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable **CONDITIONS TO AVOID:** N/A

INCOMPATIBILITY (Materials to avoid):

Mineral acids (i.e. sulfuric, phosphoric, etc.) Alkalis (i.e. Sodium or Potassium Hydroxide etc.) Organic acids (i.e. acetic acid, citric acid etc.). Reducing agents (i.e. Hydrides, sulfites etc.). Oxidizing Agents (i.e. perchlorates, nitrates, etc.). Reactive metals (i.e. sodium, calcium, zinc, etc.). Sodium or Calcium Hypochlorite. CAUTION! N-Nitrosamines, many of which are known to be potent carcinogens, may be formed when the product comes in contact with nitrous acid, nitrites or atmospheres with high nitrous oxide concentrations. Product slowly corrodes copper, aluminum, zinc and galvanized surfaces. Amines. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. Materials reactive with hydroxyl compounds. Nitriles, nitrosating agents. A reaction accompanied by large heat release occurs when the product is mixed with acids. Heat generated may be sufficient to cause vigorous boiling creating a hazard due to splashing or splattering of hot material.

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HAZARDOUS DECOMPOSITION PRODUCTS (from burning, heating, or reaction with other materials): Nitrogen oxide can react with water vapors to form corrosive nitric acid (TLV = 2 ppm). Carbon Monoxide in a fire. Carbon Dioxide in a fire. Ammonia when heated. Nitrogen Oxides in a fire. Irritating and toxic fumes at elevated temperatures. Nitric acid in a fire. Nitrosamines. Aldehydes. Organic acid vapors. The oxides of nitrogen gases (except nitrous oxide) emitted on decomposition are highly toxic.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID (If polymerization may occur): Not Applicable

SECTION XI – TOXICOLOGICAL PROPERTIES

ACUTE ORAL TOXICITY (LD50, RAT): 1200.00 mg/kg

ACUTE DERMAL TOXICITY (LD50, RABBIT): No data

ACUTE INHALATION TOXICITY (LC50, RAT): No data

OTHER ACUTE EFFECTS: No data

IRRITATION EFFECTS DATA: Mild irritant to the skin of a rabbit.

CHRONIC/SUBCHRONIC DATA: Mixed polycycloaliphatic amines was tested in rats for systemic effects in a subchronic (28-day) oral study at doses ranging from 15 – 300 mg/kg/day. Effects seen at 300 mg/kg/day included decreased survival, decreased body weight gain, increased liver, kidney and adrenal weights and histological changes in the liver, kidney, adrenals and spleen. The no-observed-adverse-effect-level (NOAEL) was 15 mg/kg/day. Component has caused allergic sensitization in animals.

SECTION XII – ECOLOGICAL INFORMATION

ECOTOXICITY: No data.

ENVIRONMENTAL FATE: 108-95-2 PHENOL; Biodegradability = 99.5% at 7 days.

ADDITIONAL INFORMATION: Waste from this product may present long term environmental hazards, thus landfill disposal must be considered less acceptable than incineration.

SECTION XIII – DISPOSAL CONSIDERATIONS

WASTE DISPOSAL:

Comply with all Federal, State and Local Regulations.

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SECTION XIV – TRANSPORT INFORMATION

D.O.T. Non-Bulk Shipping Name - Resin Compound - Not D.O.T. Regulated

D.O.T. Bulk Shipping Name: Refer to Bill of Lading.

IMO Shipping Data: Refer to Bill of Lading.

ICAO/IATA Shipping Data - Resin Compound - Not IATA Regulated

SECTION XV – REGULATORY INFORMATION

US FEDERAL REGULATIONS

Toxic Substances Control Act (TSCA) -

All components are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

OSHA Hazard Communication Standard (29CFR1910.1200) hazard class(es): Sensitizer

EPA SARA Title III Section 312 (40CFR370) hazard class: Delayed Health Hazard

EPA SARA Title III Section 313 (40CFR372) toxic chemicals above "de minimis" level are: None

STATE REGULATIONS

PROPOSITION 65 SUBSTANCES component(s) known to the State of California to cause cancer and/or reproductive toxicity and subject to warning and discharge requirements under the "Safe Drinking Water and Toxic Enforcement Act of 1986": None

NEW JERSEY TRADE SECRET REGISTRY NUMBER(S)

05995500-

SECTION XVI - INTERNATIONAL REGULATIONS

CANADA

DSL

Included on inventory

WHMIS HAZARD CLASSIFICATION

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Class D Division 2B

WHMIS TRADE SECRET REGISTRY NUMBER(S)

None

WHMIS HAZARDOUS INGREDIENTS

Benzyl Alcohol, Acid Phenol, Triethylenetetramine (TETA)

WHMIS SYMBOLS

Stylized T

EUROPEAN ECONOMIC COMMUNITY (EEC)

EINCS/ELINCS MASTER INVENTORY

Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.

EEC SYMBOL: Harmful (Xn)

EEC RISK (R) PHRASES: May cause sensitization by skin contact (R43). Harmful by inhalation and if swallowed (R20/22).

EEC SAFETY PHRASES:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice(S26). Wear suitable protective clothing and gloves (S36/37).

AUSTRALIA

AICS– Not on inventory. Notifications have been sent to the National Occupational Health and Safety Commission of Australia.

JAPAN MITI: Included on inventory.

PHILLIPPINES PICCS: Included on Inventory.

KOREA ECL: Included on Inventory.

CHINA SEPA: Included on Inventory.

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