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MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

PRODUCT NAME: EVALTM RESIN
M100B, L171B, L104B, F101A, F101B, F171B
F104B, H171B, E171B, E105B, G156B

SUPPLIER: KURAR AY CO., LTD.

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2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL PRODUCT: SUBSTANCE

CHEMICAL NAME: Ethylene vinyl alcohol copolymer

CHEMICAL FORMULA: $(\text{CH}_2\text{-CH}_2)_m\text{-(CH}_2\text{-CH)}_n\text{-OH}$

CAS REGISTRY NUMBER: 26221-27-2

INGREDIENTS AND COMPOSITION: More than 99%

3. HAZARDS IDENTIFICATION

This product is not hazardous as defined by the U.S. Occupational Safety and Health administration(OSHA) under its Hazard Communication Standard(HCS),
29 C.F.R.1910.1200.

UN CLASS AND NUMBER: Not applicable

ADVERSE HUMAN HEALTH EFFECT: No carcinogenic effects

PHYSICAL AND CHEMICAL HAZARDS: Not applicable

ENVIRONMENTAL EFFECT: Not toxic gas generation when its incineration

Risk Phase(s): This product is insoluble in water.

Poisons Schedule: Not available

Carcinogenicity: Not available

4. FIRST-AID MEASURES

INHALATION:

Inhalation is not an expected route of exposure. If overcome by finely ground or heated fumes, immediately remove victim to fresh air. If victim has stopped breathing, give artificial respiration, preferably mouth to mouth. Get medical attention immediately.

EYE CONTACT:

If finely ground dust gets in eyes, immediately flush eyes with plenty of cool water to remove particles from eyes.

SKIN CONTACT:

If molten or heated material contact to unprotected skin, wash affected area, with plenty of water.

INGESTION:

Rinse mouth with water. Give the person one or two glasses of water, try to get the victim to vomit. Arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.

5. FIRE-FIGHTING MEASURES

SPECIFIC HAZARDS:

Toxic gases(carbon monoxide) may form when burned without sufficient oxygen.

EXTINGUISHING MEDIA:

Dry chemical powder, water and carbon dioxide, are effective.

EXTINGUISHING METHOD:

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Fire fighter should wear self-contained breathing apparatus with full-face piece operated in positive pressure mode when there is a possibility of exposure to smoke, fumes or hazardous decomposition.

6. ACCIDENTAL RELEASE MEASURES

METHOD FOR CLEANING UP:

Normal procedures for clean up. Use good housekeeping practices. Contain spilled material.

Transfer to secure containers.

PERSONAL PRECAUTION:

Wear appropriate respiratory protection and protective clothing as described in section 8.

7. HANDLING AND STORAGE

HANDLING:

When handling finely ground pellets, ground all transfer, blending and dust-collecting equipment to prevent static sparks. Remove all ignition sources from material handling, transfer and processing areas where dust may be present. Mechanical and local exhaust should be provided in work areas. Do not use near open flame or areas where smoking is permitted. Pellets spilled on walking surfaces constitute a slipping hazard. Work areas should be kept clean and free pellets.

STORAGE:

Store in a cool, dry, well-ventilated location, and store in a damp-proof bag not to absorb moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PEL (OSHA Permissible Exposure Limit): No OSHA PEL for this compound.

For nuisance dust; 15 mg/m³ (respirable)-8hours TWA

TLV (ACGIH Threshold Limited Value): No ACGIH TLV for this compound.

For nuisance dust: 10 mg/m³-8hours TWA

ENGINEERING MEASURES:

Use with local exhaust ventilation. Make available emergency shower and eye wash in the work area.

PERSONAL PROTECTIVE EQUIPMENT:

RESPIRATORY PROTECTION:

Where exposure is likely to exceed acceptable criteria, use NIOSH/MSHA approved respiratory protection equipment. Respirators should be selected based on the form and concentration of contamination in air.

EYE PROTECTION:

Wear eye protection appropriate to prevent eye exposure. Chemical safety glasses with side shields, chemical goggles or full face shields are recommended.

HAND, SKIN AND BODY PROTECTION:

Wear heat protective gloves and clothing if there is a potential contact with heated materials.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE, PHYSICAL STATE, FORM, COLOR, ODOR:

White to straw colored and colorless chip and pellet, odorless.

MELTING POINT: 150 to 205 deg. C

FLASHPOINT: Not available

DENSITY: 1.12×10^3 to 1.20×10^3 kg/m³ (at 21 deg. C)

SOLUBILITY: Insoluble in water. Soluble in DMSO.

10. STABILITY AND REACTIVITY

STABILITY: This material is stable. Hazardous polymerization will not occur.

CONDITIONS AND MATERIALS TO AVOID: Extreme heat above 250 deg. C

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition products may include acetaldehyde, crotonaldehyde, acetone, acetic acid, carbon monoxide, carbon dioxide, hydrocarbons, and other organic vapors.

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11. TOXICOLOGICAL INFORMATION

(Data of EVAL_{TM} resin F101)

ACUTE TOXICITY: Oral LD 50 (rat): 6000mg/kg
Dermal LD 50 (rat): 4000mg/kg

SUB-CHRONIC TOXICITY:

Species: Dog Dose: 140mg/kg/day; Duration: 3months; Effect: No effect

CARCINOGENIC EFFECTS;

Listed as carcinogen by: {No} NTR {No} IARC {No} OSHA. None of the components of EVAL_{TM} RESIN are classified as carcinogenic as defined in Directive 90/394/EEC.

12.ECOLOGICAL INFORMATION

BIODEGRADABILITY: Not available

BIOACCUMULATION: Not available

FISH TOXICITY: Not available

13.DISPOSAL CONDITION

WASTE DISPOSAL:

All recovered material should be disposed of or reclaimed in conformance with applicable laws and regulations and in conformance with good engineering practices.

14.TRANSPORT INFORMATION

Road and Rail Transport: Not considered a hazardous material

Marine Transport: Not considered a hazardous material

Air Transport: Not considered a hazardous material

15.REGULATORY INFORMATION

TOXIC SUBSTANCE CONTROL ACT (TSCA):

All of the components of this material are listed in TSCA Inventory of Chemical Substances.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA):

This material is not considered hazardous pursuant to Title III of SARA and is not considered subject to annual reporting requirements specified by Section 312 and 313 of Title III of SARA and 40 CFR Part 372.

16.OTHER INFORMATION

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Kuraray Co., Ltd. bears legal responsibility.

The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.