SABIC Innovative Plastics™

MATERIAL SAFETY DATA SHEET

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SECTION 1: COMPOSITION/INFORMATION ON INGREDIENTS

Trade Name: VALOX* Sheet
Product ID: 215HPR 310SE0 325 357 357U 364 3706 K3501 V3900WX V4860HR

Product Description: Poly (butylene terephthalate) [CASRN 30965-26-5, alternatives: 24968-12-5 or 26062-94-2]

Product Type: Commercial Product

Recommended use: May be used as received, processed or thermoformed to produce other articles, or as a component of other industrial products.

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SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Components listed below are physical or health hazards as defined in the Hazard Co mmunication Standard. The quantities represent typical or average values for the materials shown. Additional compositional data are provided in Section 15, REGULATORY INFORMATION, subject to supplier notification requirements.

Component Name	%	CAS Number	OSHA PEL	ACGIH TWA	GE Recommended Exp. Limits
ANTIMONY OXIDE (SB2 O3)	3 - 7	1309-64-4	No PEL establishe	No TLV	Not established

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ANTIMONY COMPOUND(S)	1 - 5	7440-36-0	0.5 mg/m3 TWA	0.5 mg/m3 TWA	Not established
TETRAHYDROFURAN	0.1 - 1	109-99-9	200 ppm TWA; 590 mg/m3 TWA	200 ppm TWA	50 ppm TWA

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Pellets with slight or no odor.
- Spilled material may create slipping hazard.
- Can burn in a fire creating dense toxic smoke.
- Molten plastic can cause severe thermal burns.
- Fumes produced during melt processing may cause eye, skin, and respiratory tract irritation. Severe over-exposure may result in nausea, headache, chills, and fever.
- Secondary operations, such as grinding, sanding, or sawing can produce dust which may present an explosion or respiratory hazard.

HMIS Ratings: Health = 0; Flammability = 1; Reactivity = 0; PPE = B

POTENTIAL HEALTH EFFECTS

INGESTION:	No hazard in normal industrial use.
SKIN ABSORPTION:	No absorption hazard in normal industrial use.
INHALATION:	Pellet inhalation unlikely due to physical form. Processing fumes evolved at recommended processing conditions may contain trace amounts of tetrahydrofuran (typically less than 1 ppm). NTP has listed tetrahydrofuran as a carcinogen. Extreme processing conditions or temperatures may result in higher levels. See section 8 for appropriate exposure controls and personal protection.
EYE CONTACT:	Can cause mechanical irritation if dusts are generated.
SKIN CONTACT:	Unlikely to cause irritation even on repeated contact.

CHRONIC / CARCINOGENICITY

NTP:	Tetrahydrofuran: In 2-year carcinogenicity bioassays conducted by the National Toxicology Program (NTP), mice and rats (50/sex/group) were exposed to concentrations of 0, 200, 600, or 1,800 ppm via inhalation 6 hours/day, 5 days/week for 104 weeks. Under the conditions of these 2-year inhalation studies, there was some evidence of carcinogenic activity of tetrahydrofuran in male F344/N rats based on increased incidences of renal tubule adenoma or carcinoma (combined) at 600 and 1,800 ppm. There was no evidence of carcinogenic activity of tetrahydrofuran in female F344/N rats exposed to 200, 600, or 1,800 ppm or male B6C3F1 mice exposed to 200, 600, or 1,800 ppm. There was clear evidence of carcinogenic activity of tetrahydrofuran in female B6C3F1 mice based on increased incidences of hepatocellular neoplasms observed at 1,800 ppm.
OSHA:	Not Regulated.

IARC:	Not Listed.

NOTE: OSHA, IARC and/or NTP have listed carbon black and heavy metals, present in some colorants, as carcinogens. If these colorants are present in this product, they are shown in SECTION 2. These colorants are essentially bound to the plastic matrix and are unlikely to contribute to workplace exposure under recommended processing conditions.

Processing fumes may cause irritation to the eyes, skin, and respiratory tract. In cases of severe exposure, nausea and headache can also occur.

Grease-like processing fume condensates on ventilation ductwork, molds, and other surfaces can cause irritation and injury to skin.

MEDICAL RESTRICTIONS: There are no known human health effects aggravated by exposure to this product. However, certain sensitive individuals and individuals with respiratory impairments may be affected by exposure to components in the processing vapors.

SECTION 4: FIRST AID MEASURES

EYES:	Immediately flush eyes with plenty of water. Get medical attention if irritation develops or persists. After initial flushing, remove any contact lenses.
SKIN:	Wash with soap and water. Get medical attention if irritation develops or persists. For hot product, immediately immerse in or flush affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze and get prompt medical attention.
INGESTION:	No hazard in normal industrial use. Do not induce vomiting. Seek medical attention if symptoms develop.
INHALATION:	No specific treatment is necessary since this material is not likely to be hazardous by inhalation.
PROCESSING FUMES:	Processing fumes inhalation may be irritating to the respiratory tract. If symptoms are experienced remove victim from the source of contamination or move victim to fresh air and obtain medical advice.

SECTION 5: FIRE FIGHTING MEASURES

FIRE FIGHTING:	Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products.
EXTINGUISHING MEDIA:	Water spray and foam. Carbon dioxide and dry chemical are not recommended because their lack of cooling capacity may permit re-ignition.
CONDITIONS OF FLAMMABILITY:	Requires a continuous flame source to ignite.
AUTOIGNITION TEMPERATURE:	360C (680F), estimated
EXPLOSION DATA:	Material not sensitive to mechanical impact but is sensitive to static discharge under dust cloud conditions.

HAZARDOUS COMBUSTION PRODUCTS:	Intense heat, smoke, carbon dioxide, carbon monoxide, hydrocarbon fragments

SECTION 6: ACCIDENTAL RELEASE MEASURES

GENERAL:	Gather and store in a closed container pending a waste disposal evaluation. Allow molten material to solidify before disposal.

SECTION 7: HANDLING AND STORAGE

HANDLING:	Follow recommendations on label and in processing guide. Prevent contact with skin and eyes. Use good industrial hygiene practices. Provide adequate ventilation. Secondary operations such as grinding, sanding, or sawing may produce a dust explosion hazard. Use aggressive housekeeping activities to prevent dust accumulation: employ bonding, grounding, venting, and explosion relief provisions in accordance with accepted engineering practices.
STORAGE:	Store in a cool dry place. Avoid excessive heat and ignition sources.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:	A continuous supply of fresh air to the workplace together with removal of processing fumes through exhaust systems is recommended. Processing fume condensate may be a fire hazard and toxic; remove periodically from exhaust hoods, ductwork, and other surfaces using appropriate personal protection. Local ventilation requirements must be determined to limit exposure to processing fumes in the workplace.

PERSONAL PROTECTION

EYE/FACE:	Wear safety glasses with side shields or chemical goggles. In addition, use full-face shield when cleaning processing fume condensates from hoods, ducts, and other surfaces.
SKIN:	When handling pellets or powder, avoid prolonged or repeated contact with skin. Wear long pants, long sleeves, well insulated gloves, and a face shield during melt processing. Appropriate clothing - including chemical resistant gloves - should be worn to prevent contact with processing fumes condensate.
RESPIRATORY:	Processing fumes and condensates may contain trace quantities of tetrahydrofuran (typically less than 1 ppm, see section 2, 3 and 11). When using this product at elevated temperatures, implement engineering systems, administrative controls, or a respiratory protection program (including a respirator approved for protection from organic vapors, acid gases, and particulate matter) if processing fumes are not adequately controlled or operators experience symptoms of overexposure. If dust or powder are produced from secondary operations such as sawing, sanding or grinding, use a respirator approved for protection from dust.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Solid
COLOR:	Plastic pellet with slight odor.
ODOR:	Mild
MELTING POINT:	This product does not exhibit a sharp melting point but softens gradually over a wide range of temperatures.
VAPOR PRESSURE (mmHg):	Negligible.
SPECIFIC GRAVITY (WATER = 1):	>1
WATER SOLUBILITY:	Insoluble
% VOLATILES:	Negligible
EVAPORATION RATE:	Negligible.
OCTANOL/WATER PARTITION COEFFCIENT:	Not established

SECTION 10: STABILITY AND REACTIVITY

STABILITY:	Stable
REACTIVITY:	Not reactive under recommended conditions of handling, storage, processing, and use.
CONDITIONS TO AVOID:	Do not exceed melt temperature recommendations in product literature. In order to avoid autoignition/hazardous decomposition of hot thick masses of plastic, purgings should be collected in small, flat, shapes or thin strands to allow for rapid cooling. Quench in water. Do not allow product to remain in barrel at elevated temperatures for extended periods of time: purge with a general purpose resin. (See Section 8 for respiratory protection advice.)
HAZARDOUS DECOMPOSITION PRODUCTS	Processing fumes evolved at recommended processing conditions may include trace levels of the following materials: tetrahydrofuran (THF) and aliphatic aldehydes, hydrogen bromide

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE HEALTH HAZARDS

ACUTE ORAL:	Rat >5 g/kg Oral toxicity is estimated from tests on similar materials.
EYE CONTACT:	Product not considered primary eye irritant. When similar products, in finely divided form, were placed into the eyes of rabbits, slight transient redness or discharge occurred. This is consistent with the expected slightly abrasive nature of the resin particles.
SKIN CONTACT:	Product not considered primary skin irritant. Draize Skin Primary Irritation Score (rabbit) for similar products, in finely divided form, for a 24-hour

	exposure is 0. Not expected to be a skin sensitizer based on results of Modified Buehler Guinea Pig Sensitization Test from similar products.Dermal LD50 (rabbit) > 2g/kg, estimated.

SUBCHRONIC HEALTH HAZARDS

SUBCHRONIC TOXICITY:	No data available.

CHRONIC HEALTH HAZARDS

CARCINOGENIC PROPERTIES

NTP:	Tetrahydrofuran: In 2-year carcinogenicity bioassays conducted by the National Toxicology Program (NTP), mice and rats (50/sex/group) were exposed to concentrations of 0, 200, 600, or 1,800 ppm via inhalation 6 hours/day, 5 days/week for 104 weeks. Under the conditions of these 2-year inhalation studies, there was some evidence of carcinogenic activity of tetrahydrofuran in male F344/N rats based on increased incidences of renal tubule adenoma or carcinoma (combined) at 600 and 1,800 ppm. There was no evidence of carcinogenic activity of tetrahydrofuran in female F344/N rats exposed to 200, 600, or 1,800 ppm or male B6C3F1 mice exposed to 200, 600, or 1,800 ppm. There was clear evidence of carcinogenic activity of tetrahydrofuran in female B6C3F1 mice based on increased incidences of hepatocellular neoplasms observed at 1,800 ppm.
OSHA:	Not Regulated.
IARC:	Not Listed.
SPECIAL STUDIES:	PROCESSING FUMES: Processing fumes evolved at recommended processing conditions may contain trace amounts of tetrahydrofuran (typically less than 1 ppm). Extreme processing conditions or temperatures may result in higher levels. See section 8 for appropriate exposure controls and personal protection. In 2-year carcinogenicity bioassays conducted by the National Toxicology Program (NTP), mice and rats (50/sex/group) were exposed to tetrahydrofuran at concentrations of 0, 200, 600, or 1,800 ppm via inhalation 6 hours/day, 5 days/week for 104 weeks. Under the conditions of these 2-year inhalation studies, there was some evidence of carcinogenic activity of tetrahydrofuran in male F344/N rats based on increased incidences of renal tubule adenoma or carcinoma (combined) at 600 and 1,800 ppm. There was no evidence of carcinogenic activity of tetrahydrofuran in female F344/N rats exposed to 200, 600, or 1,800 ppm or male B6C3F1 mice exposed to 200, 600, or 1,800 ppm. There was clear evidence of carcinogenic activity of tetrahydrofuran in female B6C3F1 mice based on increased incidences of hepatocellular neoplasms observed at 1,800 ppm. Antimony trioxide: Tested in a chronic inhalation of 45 mg/m3 by guinea pigs resulted in extensive pneumonitis and fatty degeneration of the liver. Other long-term inhalation studies in rats and rabbits found lipid pneumonitis. One epidemiology study of process workers exposed to antimony metal suggests an increase in lung cancer. Animal studies and epidemiological studies suggests developmental toxicity.

SECTION 12: ECOLOGICAL INFORMATION

GENERAL:	This material is not expected to be harmful to the ecology.

SECTION 13: DISPOSAL INFORMATION

WASTE DISPOSAL:	Recycling is encouraged. Landfill or incinerate in accordance with federal, state and local requirements. Collected processing fume condensates and incinerator ash should be tested to determine waste classification.
POSSIBLE EPA WASTE CODES:	No data.

SECTION 14: TRANSPORTATION INFORMATION

REGULATORY STATUS:	Not Regulated.

SECTION 15: REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA):	This product is in compliance with all rules and orders of TSCA.
WHMIS PRODUCT CLASSIFICATION:	Not a controlled product.

If any components in this product are SARA 313 listed as reportable, they are shown below. The quantities listed for elements represent typical or average values for compounds containing the element.

Component	**CAS Number**	**%**
Antimony	7440-36-0	1 - 5
Zinc	7440-66-6	0.1 - 1

If any components in this product are known to the State of California to cause cancer and/or are reproductive hazards, they are listed below:

Component	**Reason Listed**	**CAS Number**	**%**
Not Applicable			

SECTION 16: OTHER INFORMATION

Prepared by: Product Stewardship

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ABBREVIATIONS:	ACGIH: American Conference of Governmental Industrial Hygienists CAS: Chemical Abstracts Service CFR: Code of Federal Regulations CPR: Cardiopulmonary Resuscitation EPA: Environmental Protection Agency HMIS: Hazardous Material Identification System (National Paint and Coatings Association) IARC: International Agency for Research on Cancer OSHA: Occupational Health and Safety Administration (U.S.) NTP: National Toxicology Program PEL: Permissible Exposure Limit PPE: Personal Protective Equipment SARA 313: Superfund Amendments and Reauthorization Act, Section 313 TLV: Threshold Limit Value TSCA: Toxic Substance Control Act WHMIS: Workplace Hazardous Materials Information System (Canada)