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H.M.I.S.	
HEALTH	0
FLAMMABILITY	1
REACTIVITY	0
PERSONAL PROTECTION	B
These ratings should be used only as part of fully implemented H.M.I.S. program.	

MATERIAL SAFETY DATA SHEET

DATE OF PREPARATION 6/2000

SECTION I

TRADE NAME: DURO DYNE GREY VINYL BLADE SEAL
MANUFACTURER CODE I.D.: BKDBE-3

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT	CAS No.	%	ACGIH TLV-TWA	OSHA PEL-TWA
ORGANOTIN COMPOUNDS <i>Organotin Compounds LD₅₀-N.E.</i> <i>Organotin Compounds LC₅₀-N.E.</i>	N.E.	<5%	0.1 mg/m ³ (skin)	0.1 mg/m ³ (skin)
TITANIUM DIOXIDE <i>Titanium Dioxide LD₅₀-N.E.</i> <i>Titanium Dioxide LC₅₀-N.E.</i>	13463-67-7	10-15%	10 mg/m ³ (total dust)	15 mg/m ³ (total dust)
CALCIUM STEARATE <i>Calcium Stearate LD₅₀-N.E.</i> <i>Calcium Stearate LC₅₀-N.E.</i>	1592-23-0	<5%	10 mg/m ³ (as stearate)	N.E.
VINYL CHLORIDE MONOMER <i>Vinyl Chloride Monomer LD₅₀- (rat, oral) 500pph/Kg</i> <i>Vinyl Chloride Monomer LC₅₀- (rat, inhalation) 18pph/15M</i>	75-01-4	<8.5 ppm	5 ppm	1 ppm (5 ppm TWA for any 15 minute period)
CALCIUM CARBONATE <i>Calcium Carbonate LD₅₀-N.E.</i> <i>Calcium Carbonate LC₅₀-N.E.</i>	1317-65-3	5-10%	10mg/m ³ (total dust)	15mg/m ³ (total dust)

Vinyl chloride monomer is shown as an OSHA cancer suspect agent (29 CFR 1910.1017), an American Conference of Governmental Industrial Hygienists (ACGIH) confirmed human carcinogen, and a National Toxicology Program (NTP) and an International Agency for Research on Cancer (IARC) human carcinogen.

LFL = LOWER FLAMMABILITY LIMIT PERCENT

UFL = UPPER FLAMMABILITY LIMIT PERCENT

SKIN = SKIN ABSORPTION MUST BE CONSIDERED AS A ROUTE OF EXPOSURE

C-CEILING = ALLOW. EXPOSURE LEVEL SHOULD NOT BE EXCEEDED FOR ANY TIME PERIOD

MFR = MANUFACTURER RECOMMENDED EXPOSURE LIMIT

STEL = SHORT TERM EXPOSURE LIMIT

X-SARA 313 = CHEMICAL IS SUBJECT TO REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF S.A.R.A. 40 CFR PART 372.

CAUTION! Processing fumes may cause irritation of the eyes and respiratory tract. Use with adequate ventilation. Avoid breathing process emissions. Read entire Material Safety Data Sheet.

SECTION III - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: N.E.

PRIMARY ROUTES OF EXPOSURE: Inhalation of process emissions.

EFFECTS OF OVEREXPOSURE: No adverse health effects are anticipated from the product at ambient temperatures. However, at process temperatures, the product can emit fumes and vapors which may cause irritation of the eyes and respiratory tract. Any effects will depend upon processing technique and temperature, volume processed and the effectiveness of exhaust ventilation provided for the process. Effects of chronic exposure to off-gases at processing temperatures have not been fully evaluated.

Hazardous ingredient specific medical data (if ingredient found in "pure" form):

Organotin compounds range in effect upon human health. Most of these compounds, as particulates or fume, are irritants of the respiratory tract and can precipitate headache, nausea and coughing (the onset of which may be delayed for several hours after exposure). Organotin compounds can be irritants of the skin which may result in dermatitis. If absorbed through the skin, shaking, loss of coordination, ataxia and hypersensitivity may result. Ingestion of some compounds may cause depression, excessive salivation, diarrhea and eye and nasal discharge. Animal studies have demonstrated kidney effects for certain organotin compounds. Air monitoring of organotin stabilized material during injection molding has indicated that exposure of the heated product to the atmosphere, e.g., during plastic melt temperature determinations, will produce elevated levels of organotin compounds in the product off-gases. Without proper ventilation or protective equipment, this source could contribute significantly to overall worker exposure.

Titanium dioxide can cause drying and physical abrasion/irritation of the eyes. High levels may cause pulmonary irritation, coughing, sneezing and irritation of the lungs and shortness of breath. High levels of titanium dioxide dust caused a significant increase in lung tumor in a long term inhalation study with rats. No increase occurred at the lower doses. Excessive exposure to titanium dioxide may lead to pulmonary fibrosis. Individuals with pre-existing pulmonary disease may be more susceptible.

Calcium stearate may cause irritation of the eyes and respiratory tract.

Calcium carbonate is an eye and skin irritant. High levels of dust may be irritating to nose and throat

Vinyl chloride monomer in high concentrations can cause eye, nose and throat irritation, dizziness, euphoria, drowsiness, incoordination, nausea, headache, blurred vision, disorientation, persistent irregular heart beat, unconsciousness and death. Direct contact with the liquid causes freeze burns of the skin, eyes and mucous membranes with possible permanent damage. Repeated exposure causes angiosarcoma of the liver, a rare form of liver cancer. Repeated exposure to high concentrations can cause degeneration of the tips of the finger bones. Transplacental carcinogenicity has been observed in animal studies but have not been confirmed in humans. Vinyl chloride is an OSHA cancer suspect agent (29 CFR 1910.1017), an ACGIH confirmed human carcinogen and an NTP and IARC human carcinogen.

SECTION IV - FIRST AID AND EMERGENCY PROCEDURES

INGESTION: Not an anticipated hazard.

INHALATION: (of process emissions) Remove to fresh air immediately. Get medical attention immediately.

EYES: Flush with large amounts of water, while lifting upper and lower lids. Continue for at least 15 minutes. Get medical attention.

SKIN: Not an anticipated hazard, however, good personal hygiene practices are always recommended for material handling.

SECTION V - PHYSICAL DATA

APPEARANCE: Grey cubes

ODOR: Slight characteristic

% VOLATILES: N.E.

MELTING POINT: N.E.

GLASS TRANSITION TEMPERATURE: N.E.

SPECIFIC GRAVITY: 1.48 0.02

SOLUBILITY IN WATER: N.E.

BULK DENSITY: N.E.

PHYSICAL STATE: Solid

SECTION VI - FIRE AND EXPLOSION DATA

FLASHPOINT: Not established for the product; the vinyl resin portion of the product has a flash-ignition temperature of approximately 391°C (735°F) and a self-ignition temperature of approximately 454°C (850°F). ASTM D-1929.

EXTINGUISHING MEDIA: Water, ABC dry chemical, protein type air foams. (Carbon dioxide may be ineffective on larger fires due to lack of cooling capacity which may result in reignition.)

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus (SCBA) in positive pressure mode. Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic combustion gases from any source. In enclosed or poorly ventilated areas, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

SECTION VII - REACTIVITY DATA

STABILITY: Stable.

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with strong oxidizers. Also, avoid contact with acetal or acetal copolymers and with amine containing materials during processing. At processing conditions, these materials are mutually destructive and involve rapid degradation. Thoroughly purge and mechanically clean processing equipment to avoid even trace quantities of these materials from coming in contact with each other. Prevent cross contamination of feedstocks.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride, carbon monoxide, carbon dioxide and small amounts of benzene and aromatic and aliphatic hydrocarbons.

CAUTION! Prolonged heating (approximately 30 minutes or more) of the product above 200°C (392°F) or short term heating at 250°C (482°F) may result in rapid evolution of hydrogen chloride.

SECTION VIII - ENVIRONMENTAL INFORMATION

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Vacuum or sweep material into a clean, properly labeled container for reuse or disposal.

WASTE DISPOSAL METHOD: Dispose of waste in accordance with all Federal, State and Local Regulations.

TCLP: This product or others of similar composition, in the as-shipped condition, have been tested and found to be not hazardous using the USEPA's Toxicity Characteristic Leaching Procedure (TCLP - 40 CFR 261, Appendix II). Any physical or chemical modification of this product may change the TCLP test results.

SECTION IX - PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Wear a NIOSH/MSHA approved respirator specific for chemicals listed in Section II and VI, as applicable, when concentrations exceed those limits listed. Comply with OSHA 1910.134 (29 CFR).

VENTILATION: Effective exhaust ventilation should always be provided to draw fumes or vapors away from workers to prevent routine inhalation. Ventilation should be adequate to maintain the ambient workplace atmosphere below the legislated levels listed in Section II. Hot melt processing (e.g. extruding and molding), cutting or sawing, machining, regrinding, thermoforming, heat welding and other processing or post-processing operations involving heat sufficient to result in polymer breakdown should be examined to insure adequate ventilation.

PROTECTIVE EQUIPMENT: Wear protective gloves when handling hot material during processing. Safety glasses are recommended for all industrial activities.

SECTION X - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: As with any product, should dusting occur from material handling, sources of ignition, such as static discharge, should be addressed by the user to prevent the ignition and sudden release of energy from suspended, finely divided particulates. Remove product from walkways and floors to prevent slipping hazards.

NORMAL MELT PROCESSING: Virtually all thermoplastic materials will emit fumes and/or vapors when heated to processing temperatures. The concentration of these emissions in the workplace air will depend upon variables such as the specific compound formulation, amount processed, processing method and temperature and the effectiveness of exhaust ventilation. Always use compound under well ventilated conditions and avoid continued or prolonged breathing of process vapors. For personal hygiene, wash thoroughly after processing compound, especially before eating, smoking or using toilet facilities. Do not store or consume food in processing areas. Do not use processing equipment to heat food.

CLEANUP: Cleanup following normal melt processing should be performed under well ventilated conditions. Compound may be held at process temperatures for a short time without significant thermal degradation. However, it should be recognized that exposure to either elevated temperature or excessive heat history (time) will result in decomposition. The time and temperature required to initiate degradation will vary depending upon processing technique, degree of compound stabilization and other factors. As a general rule-of-thumb, degradation begins to occur after about one hour at 177°C (350°F), about 10 minutes at 204°C (400°F) and within 5 minutes at 232°C (450°F). Equipment should be shut down for extended time periods with compound in it, or decomposition and possible corrosion of unprotected metal may result. If dies and screws are not to be cleaned manually, then purge equipment prior to shutdown using special vinyl purge compound or a compatible thermoplastic such as general purpose ABS (do not use flame-retarded or halogen-containing grades for this purpose).

PROCESSING FUME CONDENSATES: Processing fume condensates, which may include toxic contaminants, may be combustible and should be periodically removed from exhaust hoods, ductwork and other surfaces. Protective clothing, including impervious gloves, should be worn during cleanup operations to prevent skin contact.

SECTION X - SPECIAL PRECAUTIONS (continued)

STORAGE: Sprinklered warehouse areas are recommended. The product by itself will not support combustion, however, materials such as wooden pallets, paper bags, cardboard boxes and other combustibles can provide sufficient fuel to cause the product to burn.

MATERIAL NOT USED IN ONE YEAR: Material not used within one year should be tested to determine if degradation has occurred.

ABNORMAL CONDITIONS: Abnormal conditions such as equipment malfunction or using improper equipment or procedures, or hang-up or stagnation of material during processing may cause decomposition. Employees involved in removing decomposing material should be provided suitable air-supplied respirators and other appropriate protection.

HOUSEKEEPING: Remove any dust generated as a result of material handling from areas such as rafters, roofs, building columns and ductwork to eliminate any secondary potential dust explosion or fire hazards.