IPEX
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MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT IDENTIFICATION

MATERIAL NAME: CPVC PIPE AND FITTINGS

PRODUCT USE: Hot and cold water, sprinkler systems

MANUFACTURER/SUPPLIER:
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SECTION 2: PREPARATION INFORMATION

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SECTION 3: HAZARDOUS INGREDIENTS

Ingredient Name

CPVC compound (cubes, pellets, granules and/or powder)

CAS Registry No.

Not applicable to mixtures. Contains CPVC resin: CAS number 68648-82-8

Ingredient Name	Percent*	UN, NA or CAS Number	LD_{50}/LC_{50} / (Species/Route)	
Dibutyltin dilsooctyl mercapto acetate	1-10%	25168-24-5	Oral LD_{50}:	≅1100 mg/kg (rat)**
			Dermal LD_{50}:	≅6800 mg/kg (rabbit)**

* Typical amount - not a specification
** For similar tin compounds, not specifically dibutyltin diisooctyl mercapto acetate

SECTION 4. PHYSICAL DATA

PHYSICAL STATE:	Solid	**SPECIFIC GRAVITY**:	1.4 - 1.65
ODOUR AND APPEARANCE:	White, orange or gray; odorless		
BOILING POINT:	Not Applicable		
NOT APPLICABLE:	FREEZING POINT, ODOR THRESHOLD, VAPOUR PRESSURE, VAPOUR DENSITY, EVAPORATION RATE, pH, COEFFICIENT OF WATER/OIL DISTRIBUTION		

SECTION 5. FIRE OR EXPLOSION HAZARD

Flash Point/Method Used	Auto-ignition Temp	Flammable Limits (% by volume)
See Conditions of Flammability	Not Determined	Lower: See Explosion Data Upper: See Explosion Data

Conditions of Flammability

Flash-ignition temperature: $\cong 480^{o}C$ (Estimated result). Flash-ignition is the lowest initial temperature of air passing around the specimen at which sufficient combustible gas is evolved to be ignited by a small external pilot flame.

Extinguishing Media

Water, ABC dry chemical, AFFF, and protein type air foams. CPVC compounds are "ordinary combustibles" (NEPA defined Class A). Carbon dioxide is not generally recommended for use on Class A fires as a lack of cooling capacity may result in reignition.

Special Firefighting Procedures

- Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode or other positive-pressure mode and protective clothing. Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic gases from combustion, burning, or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.
- Run off water from firefighting may have corrosive effects.

Explosion Data: Not Available

Hazardous Combustion Products

- Irritating or toxic substances will be emitted upon combustion, burning, or decomposition. Smoke from burning CPVC will be very irritating.
- Thermal decomposition, combustion, or pyrolysis may emit CO, $C0_2$, hydrogen chloride, organotins, hydrocarbons. Other possible emissions: not determined.
- Hydrogen chloride, a combustion/decomposition product of CPVC, has a corrosive effect on may metals. Affected equipment surfaces and unprotected structural elements of buildings should be washed with a detergent based water solution to remove corrosive deposits as soon as possible after depositions have occurred.

Potential Combustion Product	ACGIH TLV-TWA/C/STEL	OSHA PEL/C
Carbon monoxide	TWA 25 ppm	TWA 35 ppm; C 200 ppm[2] PEL 50 ppm [1]
Dibutyltin diisooctyl mercapto acetate (as Sn)	TWA 0.1 mg/m^3 skin STEL 0.2 mg/m^3 skin	PEL 0.1 mg/m^3 [1] TWA 0.1 mg/m^3 skin [2]
Hydrogen chloride	STEL/C 5 ppm	PEL/C 5 ppm [1] C 5ppm [2]

Notes:

- ACGIH TLV-TWA: Threshold Limit Value - Time Weighted Average for concentration of the chemical substance in the ambient workplace air for a normal 8-hour workday, 40-hour workweek, to which nearly all workers may be repeatedly exposed without adverse effect. American Conference of Governmental Industrial Hygienists, 1995/1996 Edition.
- OSHA PEL: OSHA (USA) Permissible Exposure Limit, 8-hour TWA, 29CFR1910.1000
- "C" Means Ceiling Limit.
- STEL: Short Term Exposure Limit, 15-minute TWA
- The "skin" notation calls attention to the skin as an additional significant route of absorption of the listed chemical.

1 Table Z-1 values
2 Table Z-1-A values

SECTION 6. REACTIVITY DATA

Unstable Conditions	Hazardous Polymerization
Overheating causes decomposition	Will not occur

Incompatible Substances

Avoid contact with acetal, acetal copolymers and amine containing materials during processing. If processed together, these materials may be mutually destructive and degrade rapidly. Prevent cross contamination of feedstocks. Thoroughly purge and mechanically clean processing equipment to prevent these materials from coming in contact with each other. Refer to technical service reports for specific equipment and procedural recommendations.

Hazardous Decomposition Products

See "Hazardous Combustion Products"

SECTION 7. TOXICOLOGICAL PROPERTIES

Sensitization	Irritancy	Carcinogenicity	Reproductive Effects
None known	See "Acute and Chronic Health Effects"	None known	None known

Routes of entry

___Skin contact	_X_ Eye contact*	_X_ Inhalation, acute**
_X_ Skin absorption	_X_ Ingestion*	_X_ Inhalation, chronic**

* Powder compound. ** Processing vapors.

Exposure Limits

Cubes, granules or pellets:	None established.
Powder compound:	Dust/powder: None established. Use 10 mg/m^3 as a guide.
	Dibutyltin diisooctyl mercapto acetate: 0.1 mg/m^3 (as Sn)

Acute and Chronic Health Effects

- None known or expected from product at ambient temperature. All components are physically bound in the matrix during our manufacturing process and are not expected to create an exposure to individual components when the product is handled, processed, and used in accordance with good manufacturing and industrial hygiene practice and by following the guidelines in this bulletin.
- Eye contact: when cutting may contain components which may cause immediate or delayed eye irritation. The onset of irritation may not occur until several hours after exposure.
- Skin contact: when cutting may contain components which may cause effects such as reddening, swelling, irritation, and dermatitis. The onset of symptoms may not occur until several hours after exposure. Organotins can be absorbed through the skin causing effects such as reddening, swelling, irritation, and ataxia (inability to coordinate body or muscular movements), hypersensitivity, and shaking.
- Inhalation: when cutting, may contain components which may cause effects such as irritation of the nose, throat, respiratory tract and lungs. May cause nausea, headache, dizziness, lung damage, vomiting, dry throat, and abdominal pain.
- Ingestion: when cutting may contain components which may cause effects such as depression, eye and nasal discharge, stomach and intestinal irritation, and diarrhea.
    - Molten product causes skin burns.
    - At elevated temperatures (e.g., processing temperature), this product may emit fumes and vapors that are irritating to the respiratory tract, eyes and/or skin of sensitive people. The concentration and composition of vapors will depend upon variables such as processing method and temperature. The potential for acute and/or chronic health effects will depend on the effectiveness of exhaust ventilation provided to the process area.
    - Symptoms such as (but not limited to) coughing, tearing, and irritation must be regarded as potentially hazardous and measures taken to avoid exposure.
    - Smoke from burning CPVC will be very irritating. Decomposition or combustion products cause irritation, possibly severe, to the eyes, respiratory tract, and skin. From any decomposing or burning material, overexposure may cause serious injury or even cause death.

Note: Hydrogen chloride is detectable by its sharp pungent odor in concentrations as low as 1-5 ppm. Low concentrations (below 50 ppm) are not harmful in short-term exposures but do provide excellent warning properties by causing coughing or irritation. Because the protective response is so strong, humans rarely submit to damaging concentrations – instead, there is an unmistakable urge to leave the area. Repeated or prolonged exposure to high concentrations can cause eye and respiratory damage.

Thermal Processing Emissions (extrusion, molding, etc.)

Potential melt processing emissions have not been fully determined. Volatiles (fumes, vapors and odors) from start up before processing, melt processing, and equipment break down/cleanup after melt processing are expected to be the primary hazard in an occupational setting. Trace amounts of organic tin compounds (less than 0.1 mg/m^3) may be present in the ambient workplace atmosphere from melt processing. Trace amounts of carbon tetrachloride and chloroform are possible. If decomposition occurs in processing equipment due to hang up or stagnation, Hydrogen chloride is generated. Conduct any operation emitting fumes or vapors under well-ventilated conditions.

Potential Vapour / Processing Emission	ACGIH TLV-TWA/C/STEL	OSHA PEL/C
Hydrogen chloride	STEL/C 5 ppm	PEL/C 5 ppm (Table z-1) C 5 ppm (Table Z-1-A)
Organotin cmpd. (as Sn)	TWA 0.1 mg/m^3 skin STEL 0.2 mg/m^3 skin	PEL 0.1 mg/m^3 (Tbl Z1) TWA 0.1 mg/m^3 skin (Tbl Z1A)

Emergency and First Aid Procedure/General Advice

If irritation or other symptoms as noted above occur or persist from any route of exposure, remove the affected individual from the area; see a physician/get medical attention.

- Eye contact: Treat as any foreign particulate matter in the eye.
- Skin Contact: For contact with powder (dust), wash the affected area with plenty of soap and water. If molten polymer contacts skin, cool the skin rapidly with water or ice. See a physician for removal of any adhering material and treatment of burn.
- Vapor Inhalation: (melt processing vapors or decomposition products): Remove the affected individual to fresh air. Provide protection before allowing reentry.
- Dust Inhalation: Remove the affected individual to fresh air. Provide protection before allowing reentry.
- Ingestion: For ingestion of powder (dust), rinse mouth with water. Drink plenty of water to cause dilution in the stomach. Induce vomiting by sticking finger down throat or by giving Syrup of Ipecac. Call a physician at once. Never give anything by mouth to an unconscious person.

SECTION 8. PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT TO BE USED:

When cutting, the use of eye protection and a NIOSH-approved respirator for dust is recommended.

ENGINEERING CONTROLS TO BE USED:

Ventilate adequately when cutting.

WASTE DISPOSAL:

Handle in accordance with federal, state, provincial and municipal regulations.

PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL:

Pipe fragments and debris should be swept up and removed to a disposal container.

HANDLING PROCEDURES AND EQUIPMENT

- General Considerations: Conduct any operation emitting fumes or vapors under well-ventilated conditions. Ensure well-ventilated conditions by methods such as local mechanical exhaust ventilation, as necessary, during equipment start up and during operations such as hot melt processing (extruding, molding, etc.), cutting, regrinding, heat welding, soldering, and break down and cleanup of equipment after melt processing; and/or any other melt processing or pre/post-processing operation involving heat sufficient to result in fumes or vapors, or in product breakdown. Avoid continued, prolonged, and/or repeated breathing of fumes or vapors. Do not inhale, ingest, taste, swallow, or chew this product. Wash thoroughly after processing, 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.

- Equipment Start Up/Cleanup: Equipment start up and break down/cleanup following normal melt processing always must be performed under well-ventilated conditions. CPVC compound may be held at process temperatures for a short time without significant decomposition. However, recognize that CPVC compounds are designed for continuous processing and that exposure to either prolonged elevated temperature or excessive heat history (time) will result in decomposition. Melt processing equipment must not be shut down for extended periods of time with compound in it or decomposition will occur leading to irritating and/or toxic emissions as well as to possible corrosion of unprotected metal from HC1. For equipment shutdown at melt temperatures (typically inferior or equal to 200-225^{o}C), we recommend the use of a purge compound such as acrylic or general purpose ABS (do not use flame-retarded or halogen-containing grades). In case of a power or other mishap, dismantling of the die assembly should begin immediately.

STORAGE REQUIREMENTS: None

SPECIAL SHIPPING INFORMATION: Not applicable

SECTON 9. FIRST AID MEASURES

SPECIFIC FIRST AID MEASURES: No situation is likely to arise from routine handling or CPVC pipes.

INHALATION: If irritation persists, consult a physician

SKIN: Wash with soap and water

EYES: Remove particles with clean water. If irritation persists, consult a physician.

INGESTION: Do not induce vomiting: consult a physician.

SECTION 10. ADDITIONAL GENERAL INFORMATION

Disclaimer

The information contained in this material safety data sheet is based on information available to IPEX Inc. and is believed to be accurate. Where this information is based on data developed by third parties, IPEX Inc. expressly denies liability. IPEX Inc. makes no warranty, expressed or implied, regarding the accuracy of this information or data or the results obtained from its use. All recommendations are made without guarantee, since the conditions of use of this product are beyond IPEX Inc.'s control. IPEX Inc. assumes no responsibility for any damages resulting from the use of this product described herein.

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