Seelye Acquisitions, Inc.
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Material Safety Data Sheet
CPVC

TempRite ® CPVC Cube Compound[(1)]
[(1)] *Solid products furnished as pellets, cubes, granules, etc.*

U.S. DOT: Not regulated

MSDS Number: 93002
Issue Date: January 1993
Supersedes: MSDS 91015 (1/91)

Section 1

Manufacturer
The BFGoodrich Company
Specialty Polymers & Chemicals Div.
9911 Brecksville Road
Cleveland, OH 44141-3247
Telephone: (800) 331-1144

Chemical Name/Synonyms
Mixture of Chlorinated Poly (Chloroethene) resin (CPVC) and process/performance additives* such as processing aid, heat stabilizers, impact modifiers, lubricants, pigments, and/or other ingredients.

TSCA Status
Components are listed in EPA Inventory.
CAS Number: Mixture

**Specific chemical identity withheld as a trade secret (29CFR1910.1200(i)).*

Section 2 – Hazardous Ingredients/Identity Information

This product is not known to contain a substance subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40DFR372 at or above de minimus amounts.

This product is a solid material (e.g. cubes/granules/pellets). All additives are physically bound in the matrix during the 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.

Product contains:

Amount in ACGIH				
Ingredient	**CAS Number**	**Product***	**TLV-TWA/PNOC/STEL**	**OSHA PEL**
CPVC	68548-82-8	>80%	PNOX 10 mg/m^3	None established**
Organotin compound (as Sn)	7440-31-5	<5%	TLV 0.1 mg/m^3 skin	0.1 mg/m^3 skin
Titanium dioxide***	13463-67-7	<5%	TLV 10 mg/m^3	5 mg/m^3 total dust

**Typical amount – not a specification*
***As a guide, use 10 mg/m3 (5 mg/m3 respirable dust)*

****Some products (typically identified as "Natural") may contain <1% titanium dioxide, and perhaps none.*

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 work week, to which nearly all workers may be repeatedly exposed without adverse effect. American Conference of Governmental Industrial Hygienists, 1992/1993 Edition.
- PEL: OSHA Permissible Exposure Limit, 8 – hour TWA, 29CFR1910.1000.
- PNCO: Particles Not Otherwise Classified (ACGIH).
- 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.

Section 3 – Physical/Chemical Characteristics (Typical data, not specifications)

Solubility in Water – Insoluble

Melt Processing Temperature – Typically >390°F (>200°C)

Specific Gravity (H_2O = 1) – See product data sheets

Other – Characteristics such as boiling point, vapor pressure, vapor density, and evaporation rate are not applicable to this product.

Appearance and Odor – Pigmented or un-pigmented cubes, granules or pellets. Practically odorless.

Section 4 – Fire and Explosion Hazard Data

Flash-Ignition Temperature – 900°F (482°C)*

Self-Ignition Temperature – Not determined

Flammable Limits in Air – (% by volume) Lower: Not applicable
Upper: Not applicable

**Expected result. Not specifically determined for every product.*
Flash-ignition temperature 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. Self-ignition temperature is the lowest initial temperature of air passing around the specimen at which, in the absence of an ignition source, ignition occurs of itself, as indicated by an explosion, flame or sustained glow.

Extinguishing Media:
Water, ABS dry chemical, AFFF, and protein type air foams. CPVC compounds are "ordinary combustibles" (NFPA defined Class A). Carbon dioxide is not generally recommended for use on Class A fires as a lack of cooling capacity may result in re-ignition.

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Special Firefighting Procedure:
Wear self-contained breathing apparatus (SCBA) equipped with a full face piece 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 fire fighting operations.

Unusual Fire and Explosion Hazards
• Irritating or toxic substances will be emitted upon combustion, burning, or decomposition. Smoke from burning CPVC will be very irritating.
• Runoff water from fire fighting may have corrosive effects.
• Hydrogen chloride, a combustion product of CPVC, has a corrosive effect on many 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.

Section 5 – Reactivity Data

Stability – Stable

Hazardous Polymerization – Will not occur

Hazardous Decomposition Products (e.g. combustion, overheating, etc.) – Not determined. Thermal decomposition or pyrolysis may emit Co, Co_2, Hydrogen, Chloride, Organotins, Hydrocarbons.

Potential Decomposition Product	ACGIT TLV-TWA/C/STEL	OSHA PEL/C
Carbon Monoxide	TLV 25 ppm	PEL 35 ppm; C 200 ppm
Hydrogen Chloride	C 5 ppm	C 5 ppm
Organotin cmpd (as Sn)	TLV 0.1 mg/m^3 skin STEL 0.2 mg/m^3 skin	0.1 mg/m^3 skin

Note: "C" means Ceiling Limit.

Melt Processing Emissions (e.g. 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 (see Appendix). 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.

Incompatibility (conditions/materials to avoid)
• Avoid overheating
• 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 feed stocks. 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.

Section 6 – Health Hazard Data

Acute and Chronic Health Effects

- None known or expected from cubes/granules/pellets at ambient temperature.
- Molten product causes skin burns.
- At elevated temperatures (e.g. processing temperature) this product my 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.
- Effects/symptoms from melt processing, decomposition, and/or combustion such as (but not limited) coughing, tearing, reddening, swelling, irritation, nausea, headache, dizziness, vomiting, dry throat, and abdominal pain, must be regarded as potentially hazardous and measures taken to avoid exposure. Decomposition or combustion products will cause irritation, possibly sever, to the eyes, respiratory tract, and skin. From any decomposing or burning material, overexposure may cause serious injury or may 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.

Target Organs	Routes of Entry	Carcinogenicity
Melt processing vapors: Eyes, skin, respiratory system, lungs.	Inhaling melt processing vapors.	Mixture components: Not listed or regulated by IARC, NTP and OSHA.

Medical Conditions Aggravated by Exposure

Preexisting skin and/or respiratory disorders or diseases may be aggravated. In persons with asthma, impaired pulmonary function or other types of chronic obstructive respiratory diseases (e.g. – bronchitis, emphysema, bronchial hyper-reactivity), skin allergies, eczema, etc., processing fumes or vapors may cause exacerbation of symptoms.

Emergency and First Aid Procedure

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 – 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.
- Inhalation – (melt processing vapors or decomposition products): Remove the affected individual to fresh air. Provide protection before allowing reentry.
- Ingestion: No applicable information found. No effects known.

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Section 7 – Precautions for Safe Handling and Storage

Steps to be taken in case material is released or spilled
Place into a container for reuse or disposal. Do not sweep or flush product into sewers or waterways.

Waste Disposal Method
Incinerate or landfill waste in a properly permitted facility in accordance with federal, state and local regulations. For waste disposal purposes, this product is not known to be defined or designated as hazardous by current provisions of the Federal (EPA) Resource Conservation and Recovery Act (RCRA, 40CFR261). Federal, state and local regulations where the waste material is generated, treated, and/or disposed of must be examined to verify the appropriate waste classification.

Precautions to be taken in Handling and Storage
Melt Processing and Pre/Post Processing – 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 stat up and during operations such as holt 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, vapors, or product breakdown; and for operations involving solvents such as adhesive preparation. Avoid continued, prolonged, and/or repeated breathing of fumes or vapors. Do not taste, swallow or chew 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 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 >390 – 440°F [>200 – 225°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 loss or other mishap, dismantling of the die assembly should begin immediately.

> *Special Note: During equipment start up and when dismantling melt processing equipment, compound near, at, or above its normal processing temperature must never be allowed to accumulate in thick masses on the floor or elsewhere. The mass will begin to thermally decompose and to swell due to internal gassing of the molten product which will emit fumes and vapors that are irritating to the respiratory tract, eyes and/or skin. Gassing may cause the mass to explode, especially if its surface is hardened with water. Molten waste should be collected as strands or flattened to 2" or less, and quenched in a drum of cold water. Decomposing product must be removed to a well ventilated area, preferably outdoors.*

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Processing Fume Condensate
May include toxic contaminates from additives, may be combustible and should be removed periodically from exhaust hoods, ductwork and other surfaces. Impervious gloves should be worn during cleanup operations to prevent skin contact.

Static Electric
Buildup and discharge may occur when conveying, transferring or pouring product. The spark produced may be sufficient to ignite vapors of flammable liquids such as solvents used in adhesive preparation. Always transfer product by means which avoid static buildup. Avoid pouring product directly from its container into combustible or flammable material.

Recommended Safety
Sprinkle equipped warehouse areas are recommended. CPVC compound by itself typically will not support combustion but other combustible contents (e.g. wooden pallets, cardboard boxes, etc.) can provide sufficient fuel and heat to force CPVC and CPVC based compounds to burn.

Section 8 – Control Measures

Ventilation
Always provide well ventilated conditions in operations such as extrusion, molding, cutting, sawing, machining, regrinding, heat welding, thermoforming, and any other processing or pre/post processing operation involving heat sufficient to result in polymer breakdown and/or fumes or vapors. Volatiles sufficient to result in polymer breakdown and/or fumes or vapors. Volatiles from melt processing operations must not be discharged into unventilated or poorly ventilated works areas. The continuous supply of fresh air to the workplace and, when necessary, the continuous removal of volatiles through exhaust hoods will provide well ventilated conditions for most operations. Ventilation must be adequate to maintain the ambient workplace atmosphere below exposure limits listed in Section 2 and 5 and to draw fumes, vapors or smoke away from workers to prevent routine inhalation. Ventilation guidelines and techniques may be found in publications such as Industrial Ventilation American Conference of Governmental Industrial Hygienists.

Respiratory Protection
• Not normally necessary when well ventilated conditions are provided.
• Abnormal conditions such as equipment malfunction, improper equipment, improper processing procedures, hang up, or stagnation of product during processing may cause decomposition. If general dilution or local exhaust ventilation is not adequate to avoid inhalation of fumes or vapors during setup/start up, processing, and equipment teardown/cleanup, then exposed employees must be provided with suitable air supplied respirators approved by NIOSH/MSHA such as an airline respirator or positive pressure self-contained breathing apparatus.
• Operations such as cutting, grinding, regrinding, etc., may create small airborne particles (e.g., dust). If inhalation of product's dust or particulate from cutting, etc., cannot be avoided, wear a dust respirator.
• Respiratory protection, such as a NIOSH/MSHA approved positive pressure self-contained breathing apparatus, is necessary to prevent inhalation of decomposition or combustion gases.

Protective Equipment
• Safety glasses.
• Protective gloves for handling hot material during processing.

Section 9 – Transportation

Domestic Transportation (U.S.A.)	International Transportation
As cubes, granules, pellets:	As cubes, granules, pellets:
Not regulated	Not regulated

Section 10 – Hazard Classifications/Regulatory Information

Federal Regulations (U.S.A.)

- SARA Title III (40CFR311-312) Hazard Category: Not known to be applicable.
- SARA Title II Section 313 Toxic Chemical Substance(s) present at or above de minimus concentrations: None known.

State Regulations (U.S.A.)

While we do not specifically analyze these products, or the raw materials used in their manufacture, for substances on various state hazardous substances lists, to the best of our knowledge no such substances are present, or known to be present at reportable concentrations, except those specifically listed below:

- California Proposition 65 "substances know to the State of California to cause cancer, birth defects or other reproductive harm:" Carbon tetrachloride <50 ppm; chloroform <100 ppm.
- Massachusetts Substance List*: Chloroform >1 ppm; Carbon Tetrachloride >1 ppm.
- New Jersey Workplace Hazardous Substance List*: Chlorinated Poly (Chloroethene) (CAS 68648-82-8), Organotin Compound, Modifier, Lubricant, Titanium Dioxide (CAS 13463-67-7).
- Pennsylvania Right to Know Act*: Chlorinated Poly (Chloroethen), Organotin Compound, Modifier, Lubricant, Titanium Dioxide.

**Unless specifically identified, chemical identity of non-CPVC components are confidential business information (trade secret) and are being withheld as permitted by 29CFR1910-1200.*

International Regulations

- Canadian Controlled Products Classification (WHMIS): Class D, Division 2B.
- Canadian Ingredient Disclosure List (WHMIS-IDL): Tin compound, N.O.S. >1%.
- Canadian Domestic Substances List (DSL): Mixture components are listed.
- European Economic Community hazard classification: Not regulated.
- European Economic Community EINECS: Monomers for CPVC resin are listed.

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Hazard Rating Systems

NFPA 704*		HMIS**		Key:	0 = Insignificant
Health:	2	Health:	0		1 = Slight
Flammability:	1	Flammability:	1		2 = Moderate
Reactivity:	0	Reactivity:	0		3 = High
Special:	-	Personal Protection:	B		4 = Extreme
					B = Safety glasses, gloves

**National Fire Protection Association rating identifies the severity of hazards of material during a fire emergency (i.e., "on fire).*

***Hazardous Materials Identification System (National Paint and Coatings Association) rating applies to product "as packaged" (i.e., ambient temperature).*

Appendix

Less than 0.01% (<100 ppm) of residual Chloroform (CAS 67-66-3) and less than 0.005% (<50 ppm) of residual Carbon Tetrachloride (CAS 56-23-5) may remain bound in CPVC resin. The American conference of Governmental Industrial Hygienists identifies each of these chemicals as cancer suspect agents (A2). The OSHA Permissible Exposure Limit (8-hour time weighted average) to these substances is 2 ppm for Chloroform and 5 ppm for Cabon Tetrachloride. The presence of these residual chemicals in TempRite® CPVC is not expected to create a hazard. In a well ventilated workplace, the potential concentration of Chloroform or Carbon Tetrachloride will be well below established threshold limit values. Monitoring of BFGoodrich CPVC production facilities show Chloroform levels to be below 0.00003% (<0.3 ppm) and Carbon Tetrachloride levels to be below 0.00005% (<0.5 ppm) in the workplace air. BFGoodrich production workers are not required to wear special respiratory protection.

User's Responsibility

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility to use this information to develop appropriate work practice guidelines and employee instructional programs for your operation.

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