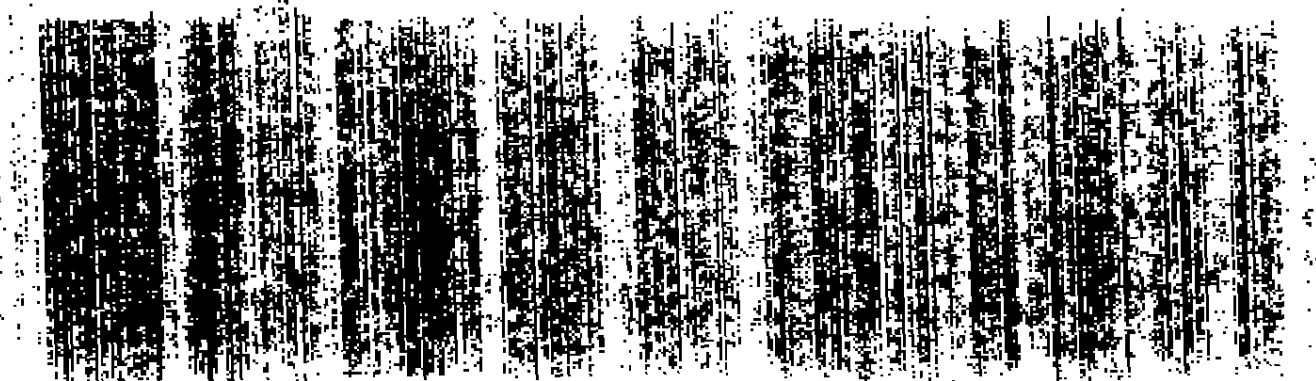




TempRite[®] CPVC Resin

U.S. DOT: Not regulated.

MSDS Number: 91016

Issue date: JANUARY, 1991

Supersedes: MSDS 88016 (3/88)

SECTION I

Manufacturer

The BFGoodrich Company
Specialty Polymers & Chemicals Div.
9911 Brecksville Road
Cleveland, OH 44141-3247
Telephone: 1-800-331-1144

Chemical Name/Synonyms

Chlorinated poly(chloroethene)

Transportation Emergency Telephone

CHEMTREC: (800) 424-9300

TSCA Status

Listed in EPA Inventory.

CAS Number: 68648-82-8

SECTION II - 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 40CFR372 at or above de minimus amounts.
- TempRite[®] CPVC resins are not irritating chemically and are not expected to create any toxic hazard when the product is handled and processed in accordance with good manufacturing and industrial hygiene practice and by following the guidelines in this bulletin.
- Exposure limits:

<u>Ingredient</u>	<u>CAS Number</u>	<u>Amount in Product*</u>	<u>ACGIH TLV-TWA/PNOC</u>	<u>OSHA PEL/STEL</u>
CPVC Resin	68648-82-8	100%	PNOC: 10 mg/m ³	PEL: 15 mg/m ³ (Total dust) PEL: 5 mg/m ³ (Respirable dust)

* Typical amount - not a specification.

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, 1990/1991 Edition.

- PEL: OSHA Permissible Exposure Limit, 8-hour TWA, 29CFR1910.1000.
- PNOC: ACGIH Particulates Not Otherwise Classified.
- STEL: OSHA/ACGIH Short Term Exposure Limit, 15-minute TWA.

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SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS (Typical data, not specifications)

A

Solubility in Water
Insoluble

Melt Processing Temp.
>390°F (>200°C)

Specific Gravity (H₂O=1)
1.5-1.6

Other

Particle size: 100% through 22 mesh screen.
Characteristics such as boiling point, vapor pressure, vapor density, and evaporation rate are not applicable to this product.

Appearance and Odor

Off-white powder.
Practically odorless.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash-Ignition Temp.
~900°F (~482°C)*

Self-Ignition Temp.
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, ABC dry chemical, AFFF, and protein type air foams. CPVC resins 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 reignition.

Special Firefighting Procedure

Wear positive pressure self-contained breathing apparatus (SCBA) and approved protective clothing. Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic gases from burning, combustion, 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.

Unusual Fire and Explosion Hazards

- Smoke from burning CPVC will be very irritating.
- Run off water from firefighting 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.
- CPVC resin by itself is not known to be a dust explosion risk (see Section VII).

SECTION V - REACTIVITY DATA

Stability
Stable

Hazardous Polymerization
Will not occur

Hazardous Decomposition Products (e.g., combustion, overheating, etc.)
Thermal decomposition or pyrolysis emits CO, CO₂, hydrogen chloride, and hydrocarbons. Small amounts of chloroform and carbon tetrachloride may be possible. Other possible emissions: Not determined.

Potential Decomposition Product	CAS Number	Amount in Product	ACGIH TLV-TWA	OSHA PEL/STEL
• Carbon monoxide	630-08-0	NI	TLV 50 ppm	PEL 35 ppm C 200 ppm
• Hydrogen chloride (HCl)	7647-01-0	NI	C 5 ppm	C 5 ppm

Notes: - "C" Means ceiling limit.
- "NI" Means not an ingredient.

Thermal Processing Emissions (e.g., extrusion, molding, etc.)
Potential emissions have not been determined. Melt processing volatiles are expected to be the primary hazard in an occupational setting. Under normal melt processing conditions (typically 390-440°F [200-225°C]) product will emit fumes, vapors and odors. If decomposition occurs in processing equipment due to hang up or stagnation, hydrogen chloride is generated. Trace amounts of carbon tetrachloride and chloroform are possible (See Appendix).

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 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.

SECTION VI - HEALTH HAZARD DATA

<u>Threshold Limit Value</u> See Section II.	<u>Routes of Entry</u> Inhaling process vapors. Inhaling product's dust.	<u>Carcinogenicity</u> Not listed or regulated by IARC, NTP or OSHA.
<u>Acute Health Effects</u> See "Signs and Symptoms of Exposure."	<u>Chronic Health Effects</u> See "Signs and Symptoms of Exposure."	<u>Target Organs</u> Eyes, skin, respiratory system.

Medical Conditions Aggravated by Exposure

Individuals with bronchial asthma and other types of chronic obstructive respiratory diseases may develop bronchospasm if exposure (inhalation) to melt processing fumes or vapors is prolonged.

Signs and Symptoms of Exposure

- None known or expected from product at ambient temperature.
NOTE: Routine inhalation of dust of any kind should be avoided. Exercise care when dumping bags or otherwise transferring powder, sweeping, mixing or doing other tasks which can create dust. If dust inhalation cannot be avoided, wear a dust respirator approved by NIOSH/MSHA.
- Molten product causes skin burns.

- A
- No adverse health effects are expected from processing CPVC when potential exposures are eliminated by good industrial hygiene practice and well-ventilated conditions. At processing temperatures, the ingredients you add to the resin to make CPVC compound (e.g., lubricant, stabilizer, etc.) 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. Typically, these effects are reversible upon removal from exposure and no lasting effects are expected. The potential for irritation will depend on the effectiveness of exhaust ventilation provided to the process area.
 - 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.

- Under any condition (processing, decomposition, etc.), symptoms such as coughing, tearing, and irritation must be regarded as potentially hazardous and measures taken to avoid exposure.

Emergency and First Aid Procedure

If irritation occurs or persists from any route of exposure, remove the affected individual from the area. Call a physician.

- Eye Contact: Treat as any foreign particulate matter.
- 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.
- Vapor Inhalation (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.
- Ingestion: No applicable information found. No effects known.

SECTION VII - 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

Dispose of waste in a licensed landfill or by incineration in accordance with federal, state and local regulations. For waste disposal purposes, this product is not defined or designated as hazardous by current provisions of the Federal (EPA) Resource Conservation and Recovery Act (RCRA, 40CFR261).

Precautions to be taken in handling and storage

- Processing and use. Virtually any thermoplastic material may emit fumes and/or vapors when heated to melt processing temperatures. Always use or process under well-ventilated conditions (see Section VII). Avoid continued or prolonged breathing of process vapors. Do not taste, swallow or chew product. Wash thoroughly after processing product -- 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 cleanup following normal melt processing should be performed under well-ventilated conditions. CPVC resin-based 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 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 HCl. For equipment shutdown at melt temperatures (typically $\geq 390-440^{\circ}\text{F}$ [$\geq 200-225^{\circ}\text{C}$]), 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: When dismantling melt processing equipment, compound at or above normal processing temperature must never be allowed to accumulate in large masses on the floor or elsewhere. The mass will decompose internally and to swell due to internal gassing. 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 inches or less, and quenched in a drum of cold water. Decomposing product should be removed to a well-ventilated area, preferably outdoors.
- Processing fume condensate may include toxic contaminants and should be periodically removed from exhaust hoods, ductwork and other surfaces. Impervious gloves should be worn during cleanup operations to prevent skin contact.
- Sprinklered warehouse areas are recommended. CPVC resin 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 to burn.
- Good housekeeping. Although no dust explosion potential is known or expected, as a precaution implement standard safety measures for handling finely divided organic powders to eliminate any secondary dust explosion potential or fire hazard. Such measures include:
 - Prevent accumulation of dust (e.g., well-ventilated conditions, promptly vacuuming spills, cleaning overhead horizontal surfaces, etc.).
 - Eliminate ignition sources (e.g., sparks, static buildup, excessive heat, open flame, etc.) where dust is present.
 - Bond, ground and properly vent conveyors, dust control devices and other transfer equipment.

SECTION VIII - CONTROL MEASURES

Ventilation

Ensure well-ventilated conditions in operations such as extrusion, molding, cutting, sawing, machining, regrinding, heat welding, thermoforming, and other processing or post-processing operations involving heat sufficient to result in polymer breakdown. Volatiles from melt processing operations should not be discharged into unventilated or poorly ventilated work 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 V and to draw dust, fumes, vapors or smoke away from workers to prevent routine inhalation. Ventilation guidelines/techniques may be found in publications such as Industrial Ventilation American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Bldg. D-7, Cincinnati, OH 45211-4438.

Respiratory Protection

- Not normally necessary.
- 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, 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.
- If dust inhalation cannot be avoided, wear a dust respirator approved by NIOSH/MSHA.
- Respiratory protection, such as a NIOSH/MSHA approved positive pressure self-contained breathing apparatus, is necessary to prevent inhalation of decomposition or combustion gasses.

Protective Equipment

- Safety glasses.
- Protective gloves for handling hot material during processing.

SECTION IX - TRANSPORTATIONFor domestic (U.S.A.) transportation purposes:

- DOT Proper Shipping Name: Not applicable
- DOT Hazard Class: Not applicable
- DOT Label: Not applicable
- UN/NA Hazard No.: Not applicable
- Reportable Quantity (RQ): Not applicable

SECTION X - HAZARD CLASSIFICATIONS/REGULATORY INFORMATIONFederal Regulations (U.S.A.)

- SARA Title III (40CFR311/312) Hazard Category: Not known to be applicable.
- SARA Title III Section 313 Toxic Chemical Substance(s) present at or above de minimus concentrations: None known.
- Chemical substance is listed in the following Federal regulations: CAS 68648-82-8 is not listed.

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 known to the State of California to cause cancer, birth defects or other reproductive harm:" No significant risk known.
- Massachusetts Substance List: Chloroform >1 ppm; carbon tetrachloride >1 ppm.
- New Jersey Workplace Hazardous Substance List: None known.
- Pennsylvania Right to Know Act: Chloroform <200 ppm.

International Regulations

- Canadian Controlled Products classification (WHMIS): Not a controlled product
- Canadian Ingredient Disclosure List (WHMIS): CAS 68648-82-8 is not listed.
- European Economic Community hazard classification: Not regulated.
- European Economic Community EINECS: Monomers listed.

Hazard Rating Systems

NEPA 704*

Health: 2
Flammability: 1
Reactivity: 0
Special: ---

HMIS**

Health: 0
Flammability: 1
Reactivity: 0
Personal Protection: B

Key: 0 = Insignificant;
1 = Slight; 2 = Moderate;
3 = High; 4 = Extreme;
B = Eye protection, 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 temp.).

APPENDIX

Less than 0.02% (<200 ppm) of residual chloroform (CAS 67-66-3) and less than 0.01% (<100 ppm) of residual carbon tetrachloride (CAS 56-23-5) may remain bound in CPVC resin. The American Conference of Governmental Industrial Hygienists identifies 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 carbon 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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