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Revision Date: 04-Nov-2014

Version 1

**1. IDENTIFICATION**

**Product Name** Heat-Shrinkable Tubing

**MSDS #** PAN-006-CA

**Recommended Use** Heat-shrinkable tubing.

**Other Information**

Typical uses of heat-shrinkable polymeric products include primary electrical insulation, EMI/RFI shielding, cable jacketing and repair, strain relief, waterproofing, cable/pipe identification, corrosion protection, environmental/mechanical protection, and cable joining, splicing, and termination in commercial and military/aerospace electronic applications.

**Supplier Address**

Panduit  
18900 Panduit Dr.  
Tinley Park, IL 60487

**Company Phone Number** Phone: 708-532-1800  
Fax: 708-532-1811

**Emergency Telephone (24 hr)** INFOTRAC 1-352-323-3500 (International)  
1-800-535-5053 (North America)

**2. HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW:**

In common with most organic materials, thermal degradation and combustion byproducts may be toxic and should not be inhaled. Thermal degradation is not significant at temperatures achieved during proper installation, as directed by product installation guides. At temperatures higher than those recommended for proper installation, most significantly if the product burns, the thermal degradation and combustion byproducts will depend on the base polymer used, and additives, if any may include, but are not limited to carbon monoxide, carbon dioxide, organic acids, aldehydes (including formaldehyde), acetic acid, low molecular weight hydrocarbons, silicon dioxide, hydrogen chloride, hydrogen fluoride, hydrogen bromide, vinyl acetate, ammonia, hydrogen cyanide, antimony, fluoro-olefins, phosphine and oxides of nitrogen, phosphorus and sulfur

**Appearance** Plastic tubing; molded parts in a variety of shapes, sizes & colors      **Physical State** Solid.      **Odor** Not determined

**Potential Health Effects**

**Acute Toxicity**

**Eye Contact**

**Skin Contact**

Contact with molten material may cause thermal burns.  
This product is not expected to be a skin irritant. Contact with the molten material may cause thermal burns. No harmful effects are expected from skin absorption of this product.  
In common with most organic materials, thermal degradation and combustion byproducts may be toxic and should not be inhaled.

**Inhalation**

**Ingestion**

Ingestion of this product is highly unlikely. There is insufficient information available on this material to predict the effects from ingestion.

**Chronic effects**

No known effect based on information supplied.

**Symptoms**

Overheating the product to charring or burning may produce vapors that may cause eye, skin, nose and throat irritation. Persons with pre-existing eye, skin, or respiratory disorders (e.g., asthma conditions) may be more susceptible to the effects of these vapors.

**Aggravated Medical Conditions** None known.

**Environmental Hazard** See Section 12: ECOLOGICAL INFORMATION

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is not hazardous per the Hazardous Products Act (HPA) and the Controlled Products Regulation (CPR). This product is a manufactured article. Heat-Shrinkable Polymeric Products are not hazardous during proper installation, but the heat-shrinkable tubing may emit hazardous thermal decomposition and combustion byproducts if overheated to degradation. See "Thermal Degradation and Combustion Byproduct" section of this MSDS for more specific information. Base polymer materials include polyethylene and olefin copolymers. Heat-shrinkable products may be coated with or used in conjunction with adhesives/mastics, which are based on olefin copolymers or polyamides.

### 4. FIRST-AID MEASURES

**Eye Contact** None under normal use conditions. If eye irritation occurs, flush with clean water for 15 minutes while holding eyelids apart. Seek medical attention.

**Skin Contact** First aid is normally not required. After handling product, it is good work practice to wash your hands. If molten material contacts skin, cool area immediately in water. DO NOT attempt to remove material from the skin. Treat as a burn, and seek medical attention.

**Inhalation** If respiratory symptoms or other symptoms of exposure develop, move victim to fresh air. If symptoms persist, seek medical attention. If breathing difficulties develop, qualified personnel should administer oxygen. If victim is not breathing, immediately begin artificial respiration. Keep victim warm and quiet; seek immediate medical attention.

**Ingestion** Not a normal route of exposure. However, if swallowed and symptoms develop, seek medical attention.

**Notes to Physician** Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

**Flammable properties** Not flammable.

**Flash Point** Not applicable

**Suitable Extinguishing Media** Use carbon dioxide, water, dry chemical or foam. Selection of extinguishing media should be based upon the size of the fire, the firefighting training/experience of the individual attempting to extinguish or control the fire, and the packaging materials exposed to the fire.

**Hazardous Combustion Products** In common with most organic materials, thermal degradation and combustion byproducts may be toxic and should not be inhaled. Thermal degradation is not significant at temperatures achieved during proper installation, as directed by product installation guides. At temperatures higher than those recommended for proper installation, most significantly if the product burns, the thermal degradation and combustion byproducts will depend on the base polymer used and additives, if any, may include but are not limited to carbon monoxide, carbon dioxide, organic acids, aldehydes (including formaldehyde), acetic acid, low molecular weight hydrocarbons, silicon dioxide, hydrogen chloride, hydrogen fluoride, hydrogen bromide, vinyl acetate, ammonia, hydrogen cyanide, antimony, fluoro-olefins, phosphine and oxides of nitrogen, phosphorus and sulfur.

#### Explosion Data

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

**Specific Hazards Arising from the Chemical** Product is not flammable or combustible.

**Protective equipment and precautions for firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. Cool containers with flooding quantities of water until well after fire is out.

**6. ACCIDENTAL RELEASE MEASURES****Personal Precautions**

Wear protective clothing as described in Section 8 of this safety data sheet.

**Methods for Containment**

Prevent further leakage or spillage if safe to do so.

**Methods for Clean-Up**

Pick up and transfer to properly labeled containers.

**7. HANDLING AND STORAGE****Advice on Safe Handling**

For products containing a thermochromic temperature indicator, discontinue heating after the color changes from red to colorless. Avoid any vapors given off if the product is heated to decomposition, as shown by a darkening and browning of the sleeve. Avoid contact with molten material. Heat-resistant gloves are required if hot products are handled after installation. Do not consume food, beverages, or tobacco in the immediate work area. Wash hands before eating, drinking or smoking. Avoid heating products beyond temperatures required for normal installation.

Installation: Follow the appropriate installation instructions and application guides to ensure that installation is performed properly. Ensure that any local requirements/legislation concerning the use of hand-held electrical equipment are observed. When using IR (infrared) heating devices, observe specific instructions. Do not touch hot surfaces on installation equipment.

**Storage Conditions**

This product is stable under normal conditions.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Exposure Guidelines**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

**Engineering Controls**

Provide general or local exhaust ventilation systems.

**Personal protective equipment (PPE)****Skin and Body Protection**

Avoid contact with skin. Use heat resistant rated gloves to prevent skin contact; as appropriate to the given operation. If it is necessary to handle grossly overheated or fire-damaged products, wear natural rubber gloves to prevent possible contact with potentially corrosive acid residues.

**Eye/Face Protection**

Use safety glasses with side shield or goggles to prevent contact with eyes, as appropriate to the given operation.

**Respiratory Protection**

If installation occurs in a confined, unventilated area, NIOSH/MSHA-approved respirators are recommended.

**General Hygiene Considerations**

Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use and the hazards and/or potential hazards that may be encountered during use.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Physical State</b>	Solid	<b>Odor</b>	Not determined
<b>Appearance</b>	Plastic tubing; molded parts in a variety of shapes, sizes & colors	<b>Color</b>	Various
<b>Odor Threshold</b>	Not determined		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	Not applicable	
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	Not applicable	
Flash Point	Not determined	
Evaporation Rate	Not applicable	
Flammability (Solid, Gas)	Not determined	
Upper Flammability Limits	Not applicable	
Lower Flammability Limit	Not applicable	
Vapor Density	Not determined	
Relative Density	Not determined	
Vapor Pressure	Not applicable	
Water Solubility	insoluble	
Solubility in other solvents	Not determined	
Partition Coefficient	Data not available	
Auto-ignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not applicable	
Dynamic Viscosity	Not applicable	
Explosive Properties	No data available	
Oxidizing Properties	No data available	

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	Stable under recommended storage conditions.
<b>Incompatible Materials</b>	None known based on information supplied.
<b>Conditions to Avoid</b>	Avoid overheating of product.
<b>Hazardous Decomposition Products</b>	See hazardous combustion products (Section 5).
<b>Hazardous Polymerization</b>	Under normal conditions of storage and use, hazardous polymerization will not occur.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

<b>Product Information</b>	.
<b>Inhalation</b>	In common with most organic materials, thermal degradation and combustion byproducts may be toxic and should not be inhaled.
<b>Eye Contact</b>	Contact with molten material may cause thermal burns.
<b>Skin Contact</b>	This product is not expected to be a skin irritant. Contact with the molten material may cause thermal burns. No harmful effects are expected from skin absorption of this product.
<b>Ingestion</b>	Ingestion of this product is highly unlikely. There is insufficient information available on this material to predict the effects from ingestion.

<b>Component Information</b>	Mixture
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**Chronic toxicity**

<b>Carcinogenicity</b>	This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
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<b>Target organ effects</b>	None known.
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<b>12. ECOLOGICAL INFORMATION</b>
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**Ecotoxicity**

The product is not expected to be hazardous to the environment.

<b>13. DISPOSAL CONSIDERATIONS</b>
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<b>Disposal of Wastes</b>	Disposal should be in accordance with applicable regional, national and local laws and regulations.
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<b>Contaminated Packaging</b>	Disposal should be in accordance with applicable regional, national and local laws and regulations.
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<b>14. TRANSPORT INFORMATION</b>
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<b><u>DOT</u></b>	Not regulated
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<b><u>IATA</u></b>	Not regulated
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<b><u>IMDG</u></b>	Not regulated
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<b><u>TDG</u></b>	Not regulated
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<b>15. REGULATORY INFORMATION</b>
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**International Inventories**

**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List

**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

**ENCS** - Japan Existing and New Chemical Substances

**IECS** - China Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**US Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**

<b>Acute Health Hazard</b>	Not determined
<b>Chronic Health Hazard</b>	Not determined

<b>Fire Hazard</b>	Not determined
<b>Sudden Release of Pressure Hazard</b>	Not determined
<b>Reactive Hazard</b>	Not determined

**CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

**CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

**US State Regulations**

**California Proposition 65**

This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm; Antimony trioxide CAS# 1309-64-4

**U.S. State Right-to-Know Regulations**

**International Regulations**

**CANADA**

This product is a manufactured article

**16. OTHER INFORMATION**

<b><u>NFPA</u></b>	<b>Health Hazards</b> 0	<b>Flammability</b> 0	<b>Stability</b> 0	<b>Special Hazards</b> -
<b><u>HMIS</u></b>	<b>Health Hazards</b> 0	<b>Flammability</b> 0	<b>Physical Hazards</b> 0	<b>Personal Protection</b> -

**Issue Date:** 29-Oct-2014  
**Revision Date:** 04-Nov-2014  
**Revision Note:** New format

**Disclaimer**

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**