Selection Guide

Thermwire®-Wrap
Pipe Freeze Protection Heating Cable

Thermwire®-Wrap Pre-Assembled
Pipe Freeze Protection Heating Cable with Attached Cord & Plug

Thermwire-Comp
Refrigeration Compressor Crankcase Heating Cable

Thermwire-Melt
Roof, Downspout and Gutter Heating Cable

Accessories
Complete Selection of Compatible Heating Cable Accessories for Each Application
Thermwire®-Wrap stops frozen pipes cold!
Apply it anywhere pipes are subject to below-freezing temperatures.

- Use it on plastic or metal pipes up to 8 inches in diameter.
- Water, Wastewater and HVAC Piping.
- Heat output of 3 Watts/ft. or 6 Watts/ft.
- 200 ft. circuit lengths for 120 Volt cable.
- 350 ft. circuit lengths for 240 Volt cable.
- Available in 50ft. and 250ft. reels and 100ft. E-Z Paks.

Thermwire®-Wrap freeze protection complete with attached cord and plug for simple and quick installation.

- Use on metal or plastic pipes up to 2.5 inch diameter.
- Outdoor Spigots.
- Heat output of 5 watts per foot.
- Pre-assembled ready for use up to 50 feet in length.
- Includes 3 foot, 120 volt, 15 amp power cord and water tight end seal.

Construction
- 16 AWG Buss Wires
- Self-Regulating Conductive Core
- Insulating Jacket
- Metallic Braid

Applications
- Metal or Plastic Pipes (up to 8” diameter)
- Dry Environments

NOTE: TW-3 is UL Listed for metal and plastic pipes; TW-6 is UL Listed for metal pipes only. Insulation must remain dry for insulation to be effective in pipe freeze protection applications.

Thermwire®-Wrap freeze protection complete with attached cord and plug for simple and quick installation.

- Use on metal or plastic pipes up to 2.5 inch diameter.
- Outdoor Spigots.
- Heat output of 5 watts per foot.
- Pre-assembled ready for use up to 50 feet in length.
- Includes 3 foot, 120 volt, 15 amp power cord and water tight end seal.

Construction
- 20 AWG buss wires
- Self-regulating conductive core
- Insulating Jacket
- Metallic Braid
- 3 foot, 120 volt, 15 amp cord set
- Water tight end seal

Applications
- Water supply lines
- Condensate lines
- Drain lines
- Outdoor spigots
**Thermwire®-Comp**

Thermwire®-comp heaters are used to prevent migration of refrigerant into crankcase oil when compressors are operated in cold temperatures. Use of these heaters can prevent excessive wear and loss of refrigerant efficiency.

- Rugged factory sealed water tight connections
- 120 volt and 208-277 volt models
- Self regulating heater can be closely coiled without burnout
- Self regulating heater can be single overlapped without burnout

**Construction**
- 16 AWG Buss wires
- Self regulating conductive core
- Insulating jacket
- Metallic braid
- UV stabilized waterproof overjacket
- 16 AWG pre stripped power and ground leads
- water tight end seal
- zip tie fastener

**Applications**
- Use on compressors up to 48” diameter
- Do not expose heater to temps above 150°F

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**Thermwire®-Melt**

Thermwire®-Melt prevents costly structural damage to roofs, gutters and downspouts caused by ice and snow. Apply anywhere melting snow and ice can penetrate roof surface and refreeze, lifting shingles, pulling gutters away, and breaking gutters and downspouts.

- Rugged construction assures reliable operation.
- Heat output up to 12 Watts/ft. in snow, water and ice.
- 150 ft. circuit lengths for 120 Volt cable.
- 250 ft. circuit lengths for 240 Volt cable.

**Construction**
- 16 AWG Buss Wires
- Self-Regulating Conductive Core
- Insulating Jacket
- Metallic Braid
- UV stabilized waterproof overjacket
- 16 AWG pre stripped power and ground leads
- water tight end seal
- zip tie fastener

**Applications**
- Roof & Gutter De-Icing
- Snow Melting
- Metal or Plastic Pipes (up to 8” diameter)
- Wet Environments

Refer to Page 9 for more detailed information on selecting the correct cable for your installation.
How much Thermwire®-Wrap do I need?

To select Thermwire-Wrap for pipe applications, use the tables on the opposite page. Use Table 1 for insulated metal pipes and Table 2 for insulated plastic pipes.

1) Find your pipe size across the top of the table.
2) Read down the left column to find the coldest expected ambient temperature and the insulation thickness you plan to use.
3) Follow the table down and across to get the recommended cable type (3 Watts/ft. or 6 Watts/ft.)
4) Straight trace the pipe unless a spiraling ratio is indicated in the cable selection box (Spiraling Ratio 2.5 = 2.5 x total pipe length to be traced).

**EXAMPLE**

Assume that the Metal Pipe Size for your application is 4 inches in diameter, the minimum anticipated temperature is –20 degrees F, and you will use a 1” thick insulation.

**FIND THERMWIRE TYPE AND SPIRALING RATIO:**

Table 1 (upper right) indicates you should use TW6, 6 Watts/ft. Thermwire with a spiraling ratio of 1.3.

**MEASURE TOTAL PIPE LENGTH:**

Assume Total Pipe Length to be traced is 230 ft.

**MULTIPLY THE SPIRALING RATIO BY THE TOTAL PIPE LENGTH:**

Total TW6 Cable Required = 1.3 x 230 ft. = 299 ft.

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### Table 1

**Metal Pipe**

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<tr>
<th>Minimum Ambient Temp.</th>
<th>Insulation Thickness</th>
<th>0.50</th>
<th>0.75</th>
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**CIRCUIT BREAKER SELECTION TABLE**

<table>
<thead>
<tr>
<th>TW3-1C WRAP</th>
<th>120V</th>
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<th>20A</th>
<th>30A</th>
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<tr>
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<td>Start up -20º</td>
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<td>Start up -20º</td>
<td>130</td>
<td>175</td>
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Color of box indicates Cable Type. Number in box indicates Spiraling Ratio.

Note: TW3 is UL Listed for metal and plastic pipes; TW6 is UL Listed for metal pipe only.

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### Table 2

**Plastic Pipe**

<table>
<thead>
<tr>
<th>Minimum Ambient Temp.</th>
<th>Insulation Thickness</th>
<th>0.50</th>
<th>0.75</th>
<th>1.0</th>
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</table>

Color of box indicates Cable Type. Number in box indicates Spiraling Ratio.

Note: TW3 is UL Listed for metal and plastic pipes; TW6 is UL Listed for metal pipe only.
How do I select a Pre-assembled Thermwire®-Wrap for my application?

**THERMWIRE-WRAP PREASSEMBLED**

*Pipe Freeze protection made simple.*

To select the type of cable you need see the tables at right. For Metal Pipe Refer to Table 1. For plastic pipe refer to Table 2. Locate the diameter and Length of pipe on the appropriate table. The letter at the intersection indicates The model number needed (see key).

**IMPORTANT NOTES ON CABLE SELECTION**

1) All cable selection tables are based on standard installation – cable fastened to pipe and covered with thermal insulation and weather barrier. For any “non-standard” installations please contact Chromalox at 1-800-443-2640.

2) The tables assume a minimum ambient temperature of 0 deg F and a thermal insulation of 1/2” thick fiberglass wrap or equivalent. For protection to – 20 deg F minimum ambient use 1” thick fiberglass wrap or equivalent.

3) Add 1 foot of heating cable for every valve or spigot in the pipeline – make sure to apply this extra cable at each valve/spigot when installing.

4) If your pipe diameter does not appear in the table, round up to the next pipe size.

5) If your selected cable length is longer than your pipe length – spiral the cable evenly along the length of the pipe.

**EXAMPLE**

Assume you want to freeze protect a 2 inch diameter, 24 foot metal pipe line.

- Use table 1 for metal pipes
- Read pipe length across the top of the chart – locate 24 feet.
- Read down to 2” pipe diameter
- Choose code E, STWS1-50P
- Spiral 50 feet, STWS1-50P evenly along 24 foot pipe length

**NOTE:**

All pre-assembled Thermwire-wrap cables should be connected to a minimum 10 Amp GFCI protected circuit breaker.
How much Thermwire®-Melt do I need?

For roof and gutter applications, use 6 Watt Thermwire-Melt, 120 or 240 Volts (TW6-1CR-Melt or TW6-2CR-Melt). The protective, waterproof outer jacket is suitable for wet applications in downspouts and roof drains.

1) To calculate the amount of Thermwire-Melt needed, multiply the roof edge length to be heat traced by the spacing factor. The spacing factor, the feet of cable required per foot of roof edge, is determined by the roof overhang, heating width (A) and heating height (B). Please see illustration and example on opposite page:

1. **Roof Overhang**
   - 12 inches
   - 24 inches
   - 36 inches

2. **Heating Width**
   - 2 feet
   - 2 feet
   - 2 feet

3. **Heating Height**
   - 18 inches
   - 30 inches
   - 42 inches

4. **Spacing Factor**
   - 2
   - 3
   - 4

2) Add the total gutter length and twice total downspout length to the figure calculated in step 1 to get the total length of cable required.

3) Determine how many circuits are required. Divide the total length of cable by the maximum heater length per circuit (see Specifications). Round that number up (for example, 2.1 to 3) to get the total number of circuits.

Roof Clips and Downspout Hangers are available to assist in installation (see Accessories on back page).

Note: Agency approval voided if T-splices are used in roof and gutter applications. Allowances for continuous runs must be made.

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**CIRCUIT BREAKER SELECTION TABLE**

<table>
<thead>
<tr>
<th>Thermwire®-Melt</th>
<th>Start up 0°F</th>
<th>120V</th>
<th>15A</th>
<th>20A</th>
<th>30A</th>
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<tbody>
<tr>
<td>TW6-1CR MELT</td>
<td>90</td>
<td>120</td>
<td>175</td>
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<tr>
<td>TW6-2CR MELT</td>
<td>135</td>
<td>185</td>
<td>250</td>
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</tbody>
</table>

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**EXAMPLE**

**MEASURE ROOF EDGE LEDGE**

Assume Roof Edge Length is 100 ft.

Assume that the Roof Overhang for your application is 24 inches. Using the chart in Step 1 (left), you should install the cable with a heating Width (A) of 2 feet and a Heating Height (B) of 30 inches. The Spacing Factor (from table) would be 3.

Multiply Roof Edge Length (100 ft.) x Spacing Factor (3) = 300 ft.

**MEASURE GUTTERS**

Assume Gutter Length is 100 ft.

Gutter Length = 100 ft.

**MEASURE DOWNSPOUTS**

Assume Downspout Length is 12 ft.

Downspout Length x 2 = 12 ft. x 2 = 24 ft.

Total Cable Length = 300 ft. + 100 ft. + 24 ft. = 424 ft.

To select the circuit breaker size and number of circuits, assume that your ambient start-up temperature is 0°F, you are using 120 V cable, and you are using 30A circuit breakers. The maximum circuit length (from table) would be 175 feet.

Divide the total Cable Length (in this example 424 ft.) by the max. Circuit Length (in the is example 175 ft.) to determine the number of circuits.

Total Cable Length 424 ft. Max Circuit Length 175 ft. = 2.4 circuits (round up to 3 circuits)
Accessories

**POWER CONNECTION KIT**
RG-PK-PAK
Use to terminate one powered end of Thermwire Heating cable. Includes end seal kit and 5 caution labels.

**SPLICE & TEE KIT**
RG-SK-PAK
Use to make water resistant seal for connecting two or three heating cables together at one point. Includes materials for two splice or two tee connections.

**END SEAL KIT**
RG-EK-PAK
Use to terminate and seal non-powered ends of Thermwire cable. Includes materials for three end seals.

**APPLICATION TAPE KIT**
ATK-PAK
1/2’ by 66 foot roll & 10 caution labels. Use to fix Thermwire cables to pipe.

**ROOF CLIP KIT**
RG-RCK-PAK
Use to securely attach Thermwire Cable to roof surface.

**DOWNSPOUT HANGER KIT**
RG-RDK-PAK
Use to suspend Thermwire-melt Heating cable in a downspout. Protects cable from mechanical damage.

**CORDSET with GFCI**
TW-GFI-CS
Use to terminate one Thermwire cable with 3 foot cord set and end seal. Cord set contains GFCI with 27 mA trip, test, reset and power on indicator light.

**PLUG IN GFI ADAPTER**
TW-GFI-PA
Plug in 4-6 mA trip level adapter. Converts standard outlet to GFI Protected outlet. For use with Thermwire pre-assembled cables only.

**JUNCTION BOX with GFCI**
TW-GFI-JB
Water tight junction box with 27mA trip GFCI. Houses one Thermwire Cable power connection. GFCI includes test, reset, and power on indicator light. Kit includes material for power connection and one end seal.

**THERMOCUBE OUTLET ADAPTER**
TW-TC-35
Converts standard outlet to power plus temperature controlled switch. Pre-set to turn power on at 35 deg F. Power off at 45 deg F. Measures ambient air temperature. Must be located at same temperature as pipe to be protected. Use with Thermwire pre-assembled cables only.

**THERMOSTAT**
PIT-15
Rain tight bulb and cap thermostat. 0-100ºF setpoints. 22 Amp, 120-277VAC Rated.

**GUTTER DE-ICING CONTROL**
GIT-4
Terminates one Thermwire-melt Circuit. Provides on/off control with Temperature and precipitation sensing. Unit includes GFCI, gutter ice sensor, and remote wall mount switch.
## Accessories

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<th>PCN</th>
<th>Model Number</th>
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<td>RG-EK-PAK</td>
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<td>Y</td>
<td>Y</td>
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<tr>
<td>386548</td>
<td>ATK-PAK</td>
<td>Application Tape &amp; Caution Label</td>
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<tr>
<td>386530</td>
<td>RCK-PAK</td>
<td>Roof Clip Kit</td>
<td>N</td>
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<tr>
<td>386411</td>
<td>RDK-PAK</td>
<td>Downspout Hanger Kit</td>
<td>N</td>
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<tr>
<td>193473</td>
<td>TW-GFI-CS</td>
<td>Cordset with GFI</td>
<td>Y</td>
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<td>N</td>
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<tr>
<td>393490</td>
<td>TW-PA-GFI</td>
<td>Plug-In GFI Adapter</td>
<td>N</td>
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<tr>
<td>393481</td>
<td>TW-JB-GFI</td>
<td>Junction Box with GFI (120 Volt)</td>
<td>Y</td>
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<tr>
<td>393502</td>
<td>TW-TC-3S</td>
<td>Thermocube Outlet Adapter</td>
<td>N</td>
<td>N</td>
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<tr>
<td>140610</td>
<td>PIT-1S</td>
<td>Thermostat (0-100°F) 22 AMP 120-277 VAC</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
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<tr>
<td>389810</td>
<td>GIT-4</td>
<td>Gutter De-Icing Control</td>
<td>N</td>
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<td>N</td>
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</table>

Use the table above to choose proper power connection, end-seal and other accessories for your heating cable application.

## Installation Tips

### THERMWARE WRAP / THERMWARE MELT
- Do not twist buss wires together at end of circuit
- Insulate all conductive parts
- Seal all electrical connections against moisture
- Seal exposed ends of cable during cable installation
- Do not expose cables to temperatures above their maximum ratings
- Install cable with Aluminum tape for use on plastic pipes
- Locate temperature sensors in coldest expected area
- Use sufficient cable to trace additional heat sinks (valves, flanges, supports)
- Insure insulation is present, dry, and weatherproofed
- All installations must be wired to Ground Fault Equipment Protection Circuit Breakers (GFEP 30 mA trip)
- Follow all product installation instructions carefully
- Follow and document all required product start-up tests

### THERMWARE PRE-ASSEMBLED
- Follow all installation instructions carefully
- Follow and document all required product start-up tests
- All installations must be connected to Ground Fault Circuit Protection Devices (see Thermwire accessories for suggested Ground fault circuit protection devices)
- Insure insulation is present, dry and weatherproofed
- Do not use extension cords with this product
- Install on outside of pipes only
- Install Thermal Insulation – fiberglass or equivalent
- Use weatherproof covering for insulation
- Use glass cloth tape to fasten cable to pipe
- Use cable tie for power cord strain relief
- Use GFI protected power receptacle

## Tools Required

### THERMWARE WRAP/ THERMWARE MELT
- Wire Cutters / Strippers
- 2500 VDC Megger
- Phillips head screw driver
- Standard screw driver
- Multimeter
- Utility Knife
- Hammer

### THERMWARE PRE-ASSEMBLED
- Utility Knife
- 2500 VDC Megger