TEMPCO Since 1972

## Electrical Resistance Heating Tape — Adhesive Backed

### Engineering Example

A 10 ft. stainless steel braided hose, 1/2" O.D., needs to be heated to 400°F from 70°F. Insulation: 1/2". The voltage is 220V.

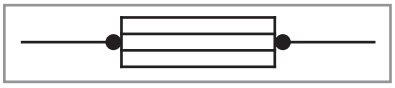
1. **Determine the Length.** To cover the hose completely would take $\pi \times 1/2" \times 120" = 188$ sq. in. A 12" length of 1/2" tape would cover 6 sq. in. of hose; therefore, 31 ft. of 1/2" tape would completely cover the hose, spiral wrapped edge to edge.
2. **Determine the Watts.** Total Power (Tp) = P × L × ΔT
   From the chart, P = .09 for a 1/2" hose with 1/2" insulation, therefore
   Tp = .09 × 10 ft. × (400-70) = 297 Watts. For rapid start-up and to compensate for colder material flowing through the hose, increase the wattage by 25% to 400W.
3. **Calculate the Ohms per Foot.** The ohms/ft. = $E^2 \div (Tp \times L)$
   Therefore ohms/ft. = $220^2 \div (400W \times 31 ft.) = 3.9$ ohms per ft.
4. **Calculate the Watts per Foot.** The Watts per ft. = Tp ÷ L
   Therefore the watts/ft. = 400 watts ÷ 31 ft. = 12.9 watts/ft.
5. **Choose Heat Tape Material from the Table.** From the table, the FTP00035, 1/2" tape with four conductors and silicone adhesive in the parallel/series connection at 4.0 ohm/ft. would fill the requirements. The required 12.9 watts/ft. is well under the maximum rating of 62 watts/ft.

Bulk roll of Heat Tape

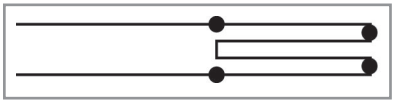
### CHART NOTES

**Resistance Wiring**

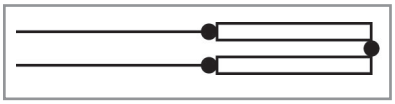
**Type 1.** Ohms per foot, with all conductors in a ***Parallel Connection***.



**Type 2.** Ohms per foot, with all conductors in a ***Series Connection***.



**Type 3.** Ohms per foot, with all conductors in a ***Parallel - Series Pair Connection***.



### Heating Tape — Ohms-Per-Foot Table

| Width | | ⅛" (4.2 mm) | | ¼" (6.3 mm) | | | ½" (12.7 mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of Conductors | | 1 conductor | | 2 conductors | | | 4 conductors | | | |
| Part Number 50 ft. roll | Part Number 100 ft. roll | Ohms/ft. | Max. Watts/ft. | Ohms/ft. *see notes* (1) | (2) | Max. Watts/ft. | Ohms/ft. *see notes* (1) | (3) | (2) | Max. Watts/ft. |
| FTP0001☐ | FTP1001☐ | 1.9 | 25 | .9 | 3.8 | 40 | .5 | 1.9 | 7.6 | 70 |
| FTP0002☐ | FTP1002☐ | 3.2 | 25 | 1.6 | 6.4 | 40 | .8 | 3.2 | 12.8 | 70 |
| FTP0003☐ | FTP1003☐ | 4.0 | 23 | 2.0 | 8.0 | 35 | 1.0 | 4.0 | 16.0 | 62 |
| FTP0004☐ | FTP1004☐ | 4.9 | 20 | 2.4 | 9.8 | 30 | 1.2 | 4.9 | 19.6 | 52 |
| FTP0005☐ | FTP1005☐ | 7.0 | 25 | 3.5 | 14.0 | 40 | 1.7 | 7.0 | 28.0 | 70 |
| FTP0006☐ | FTP1006☐ | 8.8 | 23 | 4.4 | 17.6 | 35 | 2.2 | 8.8 | 35.2 | 62 |
| FTP0007☐ | FTP1007☐ | 10.8 | 20 | 5.4 | 21.6 | 30 | 2.7 | 10.8 | 43.2 | 52 |
| FTP0008☐ | FTP1008☐ | 13.2 | 20 | 6.6 | 26.4 | 30 | 3.3 | 13.2 | 52.8 | 52 |
| FTP0009☐ | FTP1009☐ | 21.3 | 13 | 10.6 | 42.6 | 20 | 5.3 | 21.3 | 85.2 | 32 |
| FTP0010☐ | FTP1010☐ | 26.8 | 10 | 13.4 | 53.6 | 16 | 6.7 | 26.8 | 107.2 | 25 |

### Max. Watts/ft. in Ohms-Per-Foot Table

The maximum wattage per lineal foot is when the heat tape is applied to a metal heat sink at room temperature. Reduce these ratings linearly to zero watts output at 500°F. Adhesion to heat sink along entire length is important to prevent burnout when tape is used near maximum wattage rating.

**Example:** A tape that is 70W/ft. maximum watt density at 74°F, would derate to about 35W/ft. maximum watt density at 250°F.

### Accessories

| | 16-20 Ga. | 22-26 Ga. |
|---|---|---|
| *Terminal Kit for 1-wire | FTP00911 | FTP00913 |
| 2-wire | FTP00912 | FTP00914 |
| Additional solderless crimps | FTP00920 | FTP00921 |
| Aluminum/Silicone Heat Transfer Tape | 3/4" × 27 ft. FTP00930 | 1-1/4" × 27 ft. FTP00931 |

***Terminal Kits** contain silicone – not for low out-gassing applications.

Terminal kits are required to terminate the bulk tape into a finished heater assembly. To determine 1-wire or 2-wire, refer to the number of wires being terminated at the end of the heater. For example, to complete the heater in a parallel connection, two 1-wire terminal kits would be required because one lead exits from each end of the heater assembly. The "solderless crimps" are used to complete the non-lead end of the heater. The Heat Transfer Tape is used to provide additional adhesion, placed over the heating tape.

### Ordering Information — Bulk Heat Tape

Heat Tape can be ordered in **bulk in 50 or 100 ft. rolls** or in custom assemblies. The part number for each item is completed by filling in the ☐ with a number from the following table to detail adhesive type and tape width:

**1**–silicone, 1/6" wide (1 cond.) **2**–acrylic, 1/6" wide (1 cond.) **3**–silicone, 1/4" wide (2 cond.)
**4**–acrylic, 1/4" wide (2 cond.) **5**–silicone, 1/2" wide (4 cond.) **6**–acrylic, 1/2" wide (4 cond.)

**Custom Engineered/Manufactured Heaters**

For a quote, ***Please Specify*** the following

❑ Application Information ❑ Wattage Requirements ❑ Lead Information:

⚠ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.