

Heat Tape



PAULISTA HEATERS

ELECTRIC HEATING SYSTEM

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Heat Tape

1- Product Specifications

- ✓ Voltage: 24V, 110V, 220V, 380V, 440V, or others.
- ✓ Working Temperature: Up to 250°C (482°F).
- ✓ Compatibility: Suitable for both metal and plastic piping.
- ✓ Customization: Manufactured in various sizes (diameter x length).
- ✓ Optional: Can include an insulation jacket.
- ✓ Controllers: Analog thermostat, percentage control, digital thermostat, or digital panel.
- ✓ Ex Areas: Options available for hazardous (EX) classified areas.



2- General Description of Product Structure

Descrição	Detalhes Técnicos
<p>The heat trace tape is made of silicone reinforced with fiberglass fabric and resistive wire. It includes internal and external cabling according to the electric current, temperature control, and a male power plug.</p>	<p>Working Temp: -40°C (-104°F) to +250°C (482°F) (peaks of -90°C (-194°F) and +300°C (+572°F) for short periods).</p>
	<p>Weight Support: 1kg/cm²</p>
	<p>Electrical Insulation: 20KV.</p>
	<p>Hardness: Standard 30 + 5 Shore, with other hardness levels available according to the customer's needs.</p>
	<p>Fastening system using high-temperature tape (e.g., Kapton tape or fiberglass tape).</p>
	<p>Internal cabling in Teflon – withstands up to 260°C (500°F) – Voltage: up to 600V *Internal electrical connection cables are used to connect the heat trace tape to the controller.</p>
	<p>External cabling in Silicone – withstands up to 200°C (392°F) – Voltage: up to 500V</p> <p>External cabling in PP (Polypropylene) – withstands up to 90°C (194°F) – Voltage: up to 500V *External electrical connection cables do not have direct contact with the heat trace tape; they are used to connect the temperature controller to the power outlet.</p>
<p>Power supply: Alternating Current (AC) or Direct Current (DC)</p>	

Power plug:

We offer a power plug according to the project current and voltage, as well as the model the client needs for their process. The two standard options are:



3-pin Brazilian standard power plug
10A or 20A for 110V or 220V



Industrial power plug 16A, 32A, 63A,
and 125A for 110V, 220V, 380V, or
440V

Fastening system:

The heat trace tape is easily wrapped around the piping and can be secured using Kapton tape or fiberglass tape (must be high-temperature resistant) or by a thermal insulation jacket. Resistências Paulista can offer both options to its customers in the quotation. However, the pipe heating tape can be fastened by other methods that the customer deems more appropriate.

Temperature Controller:

These are the available options:

Analog Thermostat

Easy to operate and offering excellent cost-effectiveness, recommended for low-power heating bands (up to 0.5 W/cm²) and heating systems that do not require precise temperature control. Variation of +10°C. Controller used: IMIT.



Percentage Control

Easy to operate and offering excellent cost-effectiveness, recommended for low-power heating bands (up to 0.5 W/cm²) and heating systems that do not require precise temperature control. Unlike the analog thermostat, percentage control is adjusted through a potentiometer with power levels, limiting or increasing the output power, which directly impacts the temperature of the heating tape.



Digital Thermostat

Recommended for low- and medium-power heating bands (up to 0.7 W/cm^2). Temperature variation of $+5^\circ\text{C}$. Supplied with a temperature sensor (PT100, J, K, NI120, PTC, or others) for precise control of the heating band temperature. More than one controller can be coupled to monitor and control the product temperature. Controller used: NOVUS 321.



Digital Control Panel

Recommended for high-power heating bands (above 0.7 W/cm^2) and heating systems that require precise temperature control, as it features a PID function. Supplied with a temperature sensor (PT100, J, K, NI120, PTC, or others) for accurate control of the heating band temperature. More than one controller can be integrated to monitor and control the product temperature. Controllers used: NOVUS 1030 or NOVUS 1050 (with ramp/soak function, ideal for processes that must follow a heating cycle where temperature varies over time). It can be coupled directly to the product (direct connection) or mounted on a pedestal (interconnected to the heating band via a multipolar plug). Manufactured in compliance with NR10 standards (and can be customized according to the client's requirements to

meet specific process specifications). We also manufacture panels for classified EX areas.



Digital controllers hold several quality certifications, such as ISO 9001, REACH Compliance, RoHS, CE, RU, EX, among others, ensuring operational excellence and reliability for your process.

Temperature Sensor Only

If the customer already has a temperature controller, we can supply the heating band with sensor only. The temperature sensors commonly used are: J, K, PT100, NI120, and PTC (other models can be provided according to specific requirements). We offer sensors pre-installed on the heating band to control its temperature, or with a bulb probe to control the product temperature.

With Bimetal Thermostat

Consists of a thermostat installed internally in the heating tape to limit it to a fixed temperature. It operates through mechanical actuation based on thermal expansion. This type of solution is less precise and recommended only for

low temperatures; however, it is a more cost-effective option.

Without Temperature Control

We can also supply the heating band without any type of temperature controller (not recommended for high-watt density heating tapes or technically complex processes).

Insulation Cover:

This is the outer coating designed both to protect the heating band and to provide thermal insulation, preventing heat loss to the environment and protecting the operator from burn risks. The cover is made of Cordura fabric, Nomex, and insulating blanket, offering high mechanical resistance and withstanding elevated temperatures. In addition, it provides safety during operation, as it does not propagate flames. Being waterproof, it also allows use in outdoor environments. The Velcro fasteners positioned at the ends enable modular assembly, allowing the heating area to be expanded according to the application's requirements. Cleaning is simple and done dry using a cloth and alcohol, as the fabric does not retain dirt.



3- Instruction Manual

Operating Instructions

1. Install the heating tape by wrapping it along the pipe, maintaining an equal spacing between the turns.
2. The heating tape can be better secured using high-temperature tapes such as Kapton tape or fiberglass tape, with thermal insulation or with an insulation cover fastened by Velcro.
3. In the case of an analog thermostat, set it to zero.
4. Check the mains voltage where the heating tape will be connected. If connected to a lower voltage, it will heat insufficiently; if connected to a higher voltage, it may burn out.
5. Connect the heating tape to the power supply.
6. Set the desired temperature.
7. In the case of a digital controller, follow the supplier's instructions to program it according to your process. For high-power heating tapes, it is recommended to initially set the temperature to 100°C, then increase it by 20°C every 10 minutes until reaching the desired temperature. This allows the heating to stabilize, as high watt density systems heat up very quickly.
8. Wait until the heating tape reaches the desired temperature.
9. Keep heating until the product stored in the drum reaches the appropriate temperature. Heating time varies according to the specific heat of the product, the heating tape power, and the container volume.
10. After use, unplug the heating tape and wait 1 minute for it to cool down.
11. Remove the heating tape and store it properly (by rolling it onto itself).

Recommendations

- Do not use the heating tape above its design temperature. It can operate continuously up to 250°C, with peaks up to 300°C.
- Metal pipes withstand high temperatures, but plastic pipes support a maximum of 90°C (temperatures above this may cause damage).
- Operate the heating tape only when there is product flow ensuring heat exchange.
- Store and transport the heating tape properly. Do not bend, stretch, kick, or drop it, as this may damage the resistive elements and internal controller components.
- Use rubber gloves to avoid static discharge. Static shock is not dangerous but may cause discomfort.
- Do not move the heating tape while it is heating or still hot, as this may damage the resistive elements.
- Do not puncture, cut, or immerse the heating blanket in liquid; risk of electrical short circuit.
- The heating tape may release gases from its internal components during the first heating cycles (especially at temperatures above 150°C).
- Cleaning must be performed only when the unit is disconnected from power, using a clean cloth and alcohol.
- If there is any damage to the heating tape or panel, stop using it and notify Resistências Paulista to verify whether it is safe to continue operation, as there may be a risk of electric shock.
- Do not modify the heating tape without prior notification and authorization from Resistências Paulista, as unauthorized modifications void the product warranty.

- Store the heating tape rolled up; do not fold or crease it under weight, as this may damage the internal resistive element.
- Keep flammable products away from the heating tape during operation.

Safety Items

- ✓ The heating tape is fully electrically insulated and resistant to fungi and chemicals.
- ✓ To prevent burn risks, the use of an insulation cover is recommended.
- ✓ The insulation cover provides approximately 70% thermal insulation, allowing operators to work near the heated container.
- ✓ The insulation cover is waterproof, flame-retardant, cut-resistant, and suitable for high temperatures.
- ✓ Cleaning of both the heating tape and the cover must be done dry, using a cloth and alcohol.
- ✓ Neither the heating tape nor the cover easily retains dirt.
- ✓ The digital panel can be manufactured in compliance with NR10 standards.
- ✓ The heating tape presents no risk for use in classified EX areas, as the resistive element is fully sealed.
- ✓ For classified EX areas, we provide certified panels and appropriate cabling (please inform your classification so the technical department can evaluate).
- ✓ When supplied with a pedestal-mounted panel, the panel is grounded. However, grounding of the equipment being heated is the client's responsibility.
- ✓ Low- and medium-watt density heating tapes (up to 0.7 W/cm²) will not burn out if powered without heat exchange at temperatures up to 250°C. However,

high-watt density tapes must not be operated without proper heat exchange, as there is a risk of burnout.

- ✓ Do not use the heating tape if it shows bubbles, punctures, cuts, exposed resistive elements, or burn marks, as there is a risk of electric shock.
- ✓ The heating tape does not come into contact with the product flowing inside the pipe.
- ✓ Never handle the silicone surface with materials or tools that may damage the electrical insulation.
- ✓ Provides a safe heating process for operators, with minimal risk of workplace accidents.

4- Application

The heating tape is ideal for heating and temperature maintenance of products flowing through metal or plastic piping systems.



Ideal for use in areas such as:

- ✓ Pharmaceutical industry
- ✓ Food industry
- ✓ Chemical industry
- ✓ Metallurgical industry
- ✓ Mechanical workshops
- ✓ Laboratories

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Registration Data

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CNPJ

44.493.049/0001-07

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