ROTFIL

QUALITY SYSTEM CERTIFICATION DNV ISO 9001

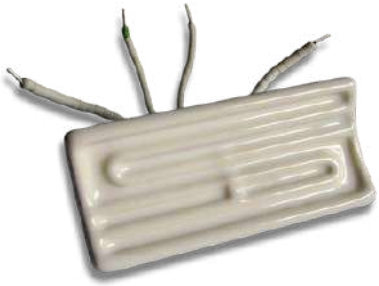
# INFRARED HEATERS

ROTFIL infrared heaters are high-precision instruments, engineered to heat in an **effcient, uniform and controlled** way. They represent a **versatile solution** for a wide range of applications, from plastic and chemical to food&service (consult next pages).

Thanks to their capability to **trasmit heat in a direct way and without contact**, infrared heaters are ideal for processes as drying, polymerization, sterilization, localized heating and surface tratments.

In our catalog you will find a wide model selection, designed to satisfy **specific needs** and to assure the best **energy efficency**. If a **customization** regarding power, tensions and dimensions is needed, kindly contact us at info@rotfil.com.

Consult our solutions and find out how infrared heaters can **improve your processes and optimize your applications**.



## FEATURES AND ADVANTAGES:

- Surface temperature to 750 °C.
- Mid-to-far wavelength infrared heat source provides uniform heat over a large area.
- Primary emission in the 3 - 10 micron range (no visible light), which is the most efficient wavelength for heating of platics, paper, textiles, and drying of most solvents

- Available with built-in type **K thermocouple**
- Available in 122 x 60 mm, 245 x 60 mm, 122 x 122 mm sizes
- Available with t**hermo-sensible surface**, that turns from pink to grey when heating, providing evidence of correct operation

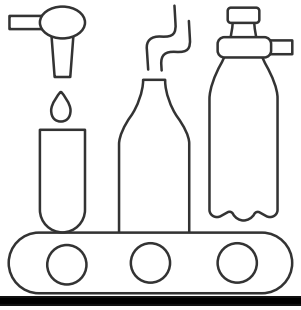
- **Clean, non contamining and non-touching heating operations**
- **Glaze-coated ceramic body** with no surface flaking or oxidation as on metal infrared heating elements
- Provides perfectly **repeteable performance**
- Easily arranged in **large arrays** that may be set up and controlled in zones

- Operating life over **5000 hours** minimizes machine downtimes
- **Resistant to thermal shock**. Hetaers are not damaged if hit by wated drops and spray.

# APPLICATIONS

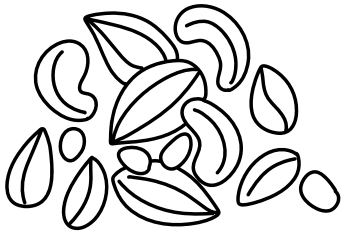
## 1 PLASTIC AND PACKAGING

Injection molding, extrusion machines, thermoforming...



## 2 FOOD & SERVICE

For contactless drying, equipment (pasteurization, sterilization...), heating of working elements (tanks, containers...), packaging machines...

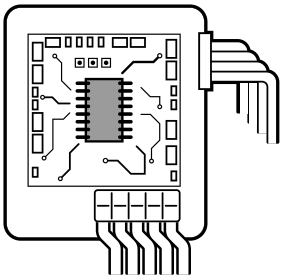


## 3 CHEMICAL-PHARMACEUTICAL

Since it radiates heat without contact, it is particularly useful for the sector. It can be used for drying processes, accelerating chemical reactions, sterilization, capsule polymerization, and surface heating.

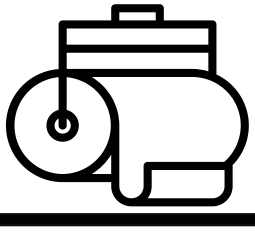
## 4 ELECTRONIC

Preheating for PCBs, to reduce thermal shock during soldering and prevent deformation and defects. Infrared ovens for SMT (Surface Mount Technology).



## 5 PAPER

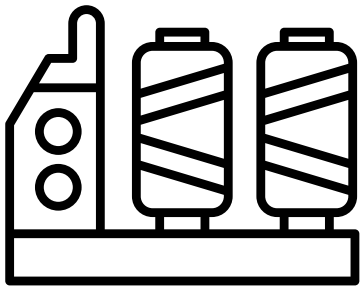
For example, for rapid drying of coated paper, as well as drying and adhesives activation.



# APPLICATIONS

## 6 TEXTILE

Drying of painted or printed tissues, polymerization...

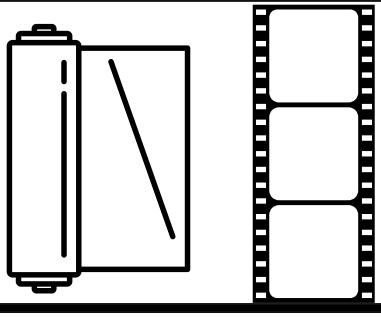


## 7 CERAMIC

Drying of painting and decoration elements

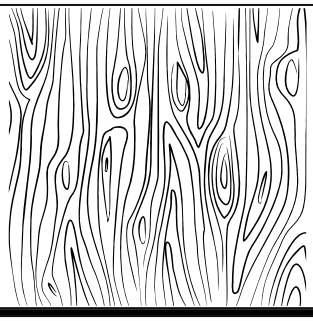
## 8 THIN-FILM

For example, for substrates vacuum coating.



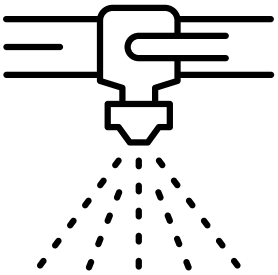
## 9 WOOD

Heating and drying of coated and painted surfaces, glued elements....



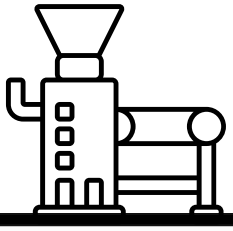
## 10 PAINTING

Drying and thermal surface treatments

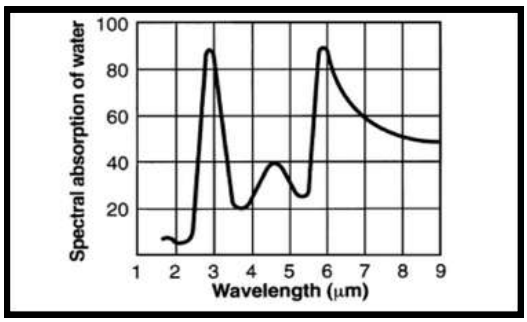


## 11 PRINTING

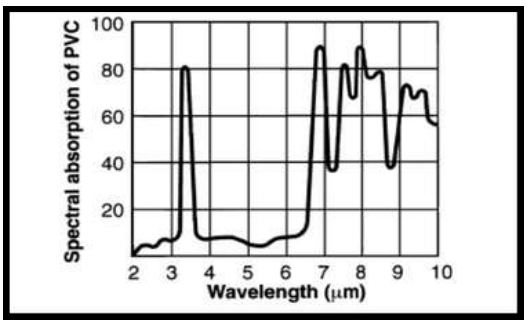
Ink drying



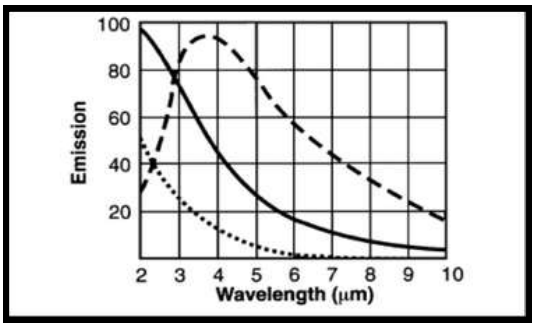
# TECHNICAL DATA



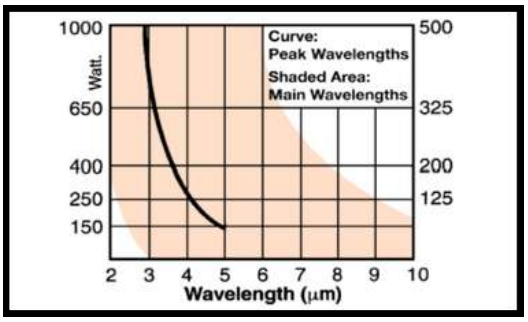

This diagram shows that water absorbs long wave infrared very well. Absorption maxima are approx. 3 µm and 6 µm.



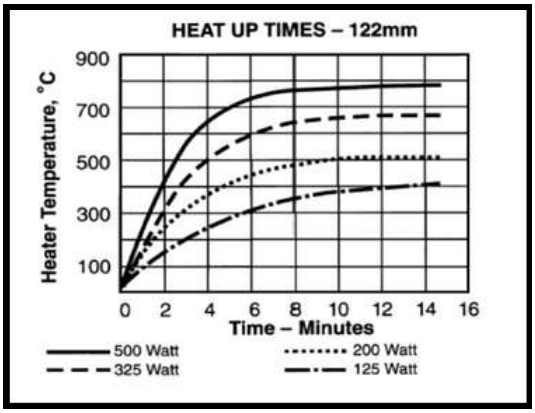

This is the spectral absorption of PVC. The main absorption range lies between 7 and 10 µm. The curves for other plastics exhibit a similar character.



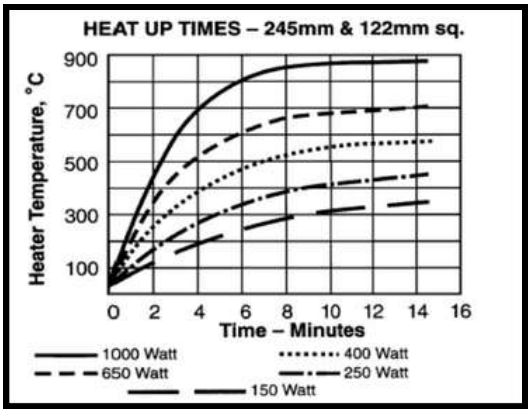

**Emission spectrum of black body radiators.**
**Dotted Line:** 2100°C (as for visible radiators);
**Solid Line:** 1100 °C (as for quartz radiators);
**Dashed Line:** 510°C for ceram ic radiators, best range 3 to 10 µm




This diagram enables peak wavelength and main wavelength to be determined for each radiator's power rating.




Heating curve. Temperatures are recorded by the thermocouple; the ones on the surface are lightly lower.




Heating curve. Temperatures are recorded by the thermocouple; the ones on the surface are lightly lower.

# INFRARED HEATERS CHOICE

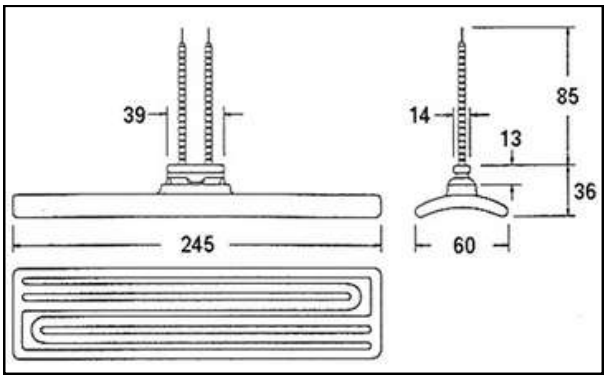
The following table will help your infrared heater choice. Consulting the following pages, you will find codes with relative measures, powers, tensions and temperatures.

| | RATED POWER | | | |
|---|---|---|---|---|
| *122x60 mm:* | 125 W | 200 W | 325 W | 500 W |
| *245x60 mm:* | 250 W | 400 W | 650 W | 1000 W |
| Pre-heating sheet and panels in vacuum molding machines | | ■ | ■ | |
| Manufacture of skin packs | | ■ | ■ | |
| Jelling PVC paste coatings on fabrics | | ■ | | |
| Heather paper pulp before pressing | | | ■ | ■ |
| Rapid drying of lacquered paper and card | ■ | | | |
| Rapid drying of gummed and adhesive coated paper | | ■ | | |
| Activating adhesives and hot seal coatings | | ■ | | |
| Drying plastic emulsions (latex coatings) | | ■ | | |
| Drying washed, dyed, finished textile fabrics | | | ■ | ■ |
| Fixing nylon or perlon thread | ■ | ■ | | |
| Heating and drying cemented wood or furniture components | | ■ | | |
| Drying skins, hides and spray colored leather | ■ | | | |
| Heating and drying cemented joints of shoes | | | ■ | ■ |
| Drying sprayed-on glazes on ceramic tiles | | ■ | | |
| Drying and baking painted sheet metal components | ■ | ■ | ■ | |
| Heating substrates in vacuum chambers | | | | ■ |

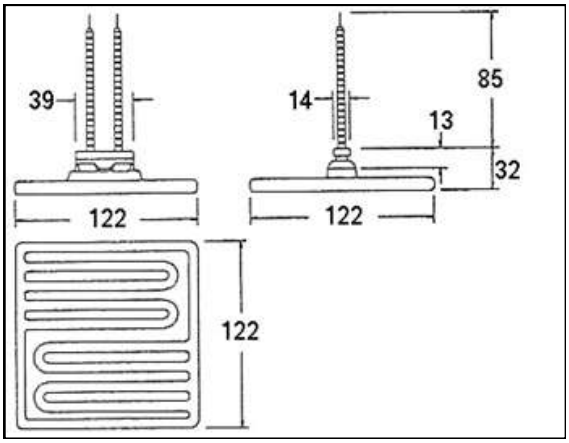
ROTFIL offers a wide range of infrared heaters. Between our products, you can find **square and rectangular infrared heaters**, with or without **assemblies**.

# SIZES

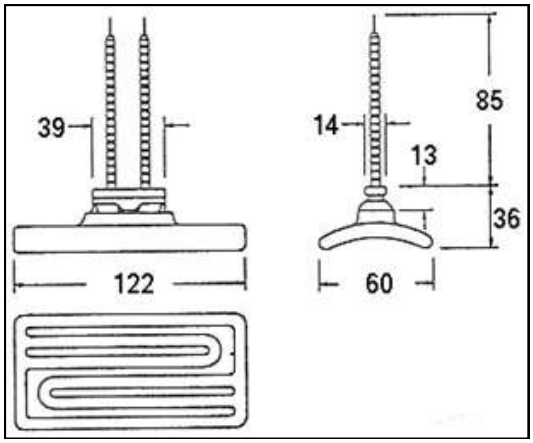
Infrared heaters are available in these sizes:




245 x 60 mm, curve




122 x 60 mm, curved



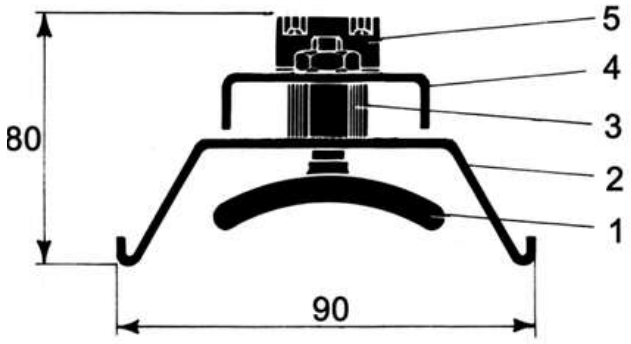

122 x 60 mm, flat

# DATA AND CODE

| Size | Shape | Power (W) | Tension (V) | Average Surface Temp. (°C) | Max. Allowed Surface Temp. (°C) | Peak Wave-length (µm) | Part number without Thermocouple | Part number with Thermocouple |
|---|---|---|---|---|---|---|---|---|
| 122 x 60 | Curved | 125 | 230 | 420 | 550 | 4,3 | IRRA000136 | IRRA000137 |
| | | 200 | 230 | 510 | 600 | 3,7 | IRRA000138 | IRRA000139 |
| | | 325 | 230 | 630 | 700 | 3,2 | IRRA000140 | IRRA000141 |
| | | 500 | 230 | 750 | 800 | 2,9 | IRRA000142 | IRRA000143 |
| 245 x 60 | Curved | 150 | 230 | 310 | 450 | 4,9 | IRRA000144 | IRRA000145 |
| | | 250 | 230 | 420 | 550 | 4,3 | IRRA000146 | IRRA000147 |
| | | 400 | 230 | 510 | 600 | 3,7 | IRRA000148 | IRRA000149 |
| | | 650 | 230 | 630 | 700 | 3,2 | IRRA000150 | IRRA000151 |
| | | 1000 | 230 | 750 | 800 | 2,9 | IRRA000152 | IRRA000153 |
| 122 x 122 | Flat | 400 | 230 | 510 | 600 | 3,7 | IRRA000180 | IRRA000175 |
| | | 650 | 230 | 630 | 700 | 3,2 | IRRA000181 | IRRA000185 |
| | | 1000 | 230 | 750 | 800 | 2,9 | IRRA000184 | IRRA000186 |

# REFLECTOR ASSEMBLIES

These assemblies allow to put in the same line more heaters.




1) Heaters
2) Reflector
3) Spacers
4) Supporting Frame
5) Terminal Blocks

| Item | Part No. | Description |
|---|---|---|
| 1 | *see "Specifications"* | Heater, size 245 x 60 mm (includes clip and spring for fixing) |
| 2 | RIFL000001 | Reflector (length 500 mm), for 2 heaters |
| | RIFL000002 | Reflector (length 750 mm), for 3 heaters |
| | RIFL000003 | Reflector (length 1000 mm), for 4 heaters |
| | RIFL000004 | Reflector (length 1250 mm), for 5 heaters |
| | RIFL000005 | Reflector (length 1500 mm), for 6 heaters |
| | RIFL000006 | Reflector (length 1750 mm), for 7 heaters |
| | RIFL000007 | Reflector (length 2000 mm), for 8 heaters |
| 3 | ACCS000010 | Spacer assembly (2 pcs for assemblies of 1-4 heaters, 3 pcs for assemblies of 5-8 heaters) |
| 4 | SUPP000003 | Supporting frame (length 500 mm), for 2 heaters |
| | SUPP000004 | Supporting frame (length 750 mm), for 3 heaters |
| | SUPP000005 | Supporting frame (length 1000 mm), for 4 heaters |
| | SUPP000006 | Supporting frame (length 1250 mm), for 5 heaters |
| | SUPP000007 | Supporting frame (length 1500 mm), for 6 heaters |
| | SUPP000008 | Supporting frame (length 1750 mm), for 7 heaters |
| | SUPP000009 | Supporting frame (length 2000 mm), for 8 heaters |
| | SUPP000010 | Supporting frame with extended length for mounting (length 580 mm), for 2 heaters |
| | SUPP000011 | Supporting frame with extended length for mounting (length 830 mm), for 3 heaters |
| | SUPP000012 | Supporting frame with extended length for mounting (length 1080 mm), for 4 heaters |
| | SUPP000013 | Supporting frame with extended length for mounting (length 1330 mm), for 5 heaters |
| | SUPP000014 | Supporting frame with extended length for mounting (length 1580 mm), for 6 heaters |
| | SUPP000015 | Supporting frame with extended length for mounting (length 1830 mm), for 7 heaters |
| | SUPP000016 | Supporting frame with extended length for mounting (length 2080 mm), for 8 heaters |
| 5 | MRST000005 | Terminal block assembly, for heaters without thermocouple (1 pc for each spacer) |
| | MRST000003 | Terminal block assembly, for heaters with thermocouple (1 pc for each spacer) |

Above components, if ordered with the above part numbers, are delivered not assembled together.

! To receive assembled reflector assemblies (one part number only), please contact us at info@rotfil.com, or contact our sales department.

ROTFIL

Electric
heaters
since 1977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