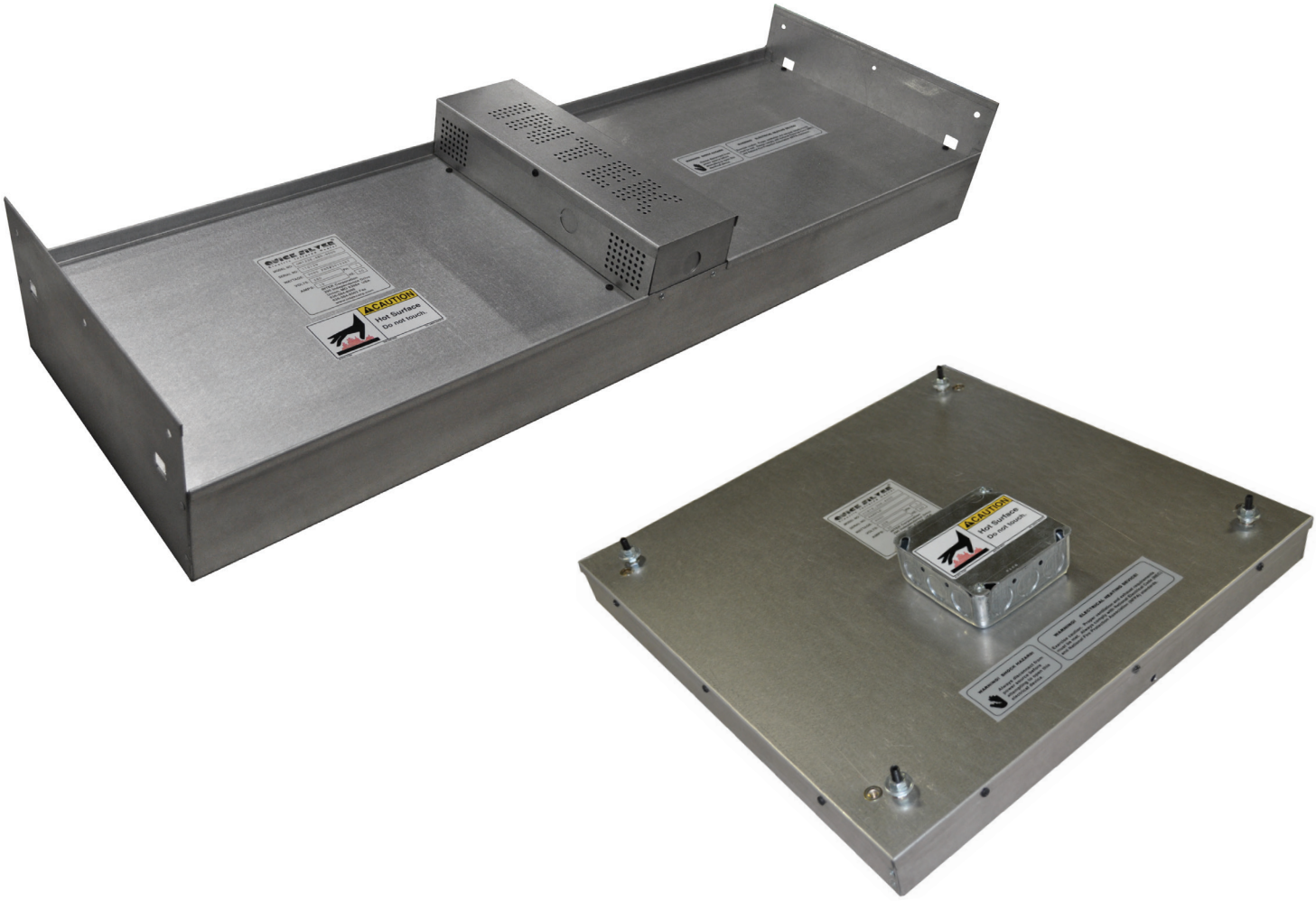
INTEK
CORPORATION USA

Modular Infrared Heaters



- OM Model
- C Model
- Heaters & Controls
- Custom Equipment

Medium/Long Wavelength Infrared Emitters

Thermo-forming | Paint Curing | Powder Coating | Screen Printing | Custom Applications

INFRARED ENERGY BASICS

It's as simple as the Sun

The easiest way to explain infrared energy and its practical heating capabilities is to start with a basic definition:

INFRARED ENERGY- Invisible radiation in the part of the electromagnetic spectrum characterized by wavelengths just longer than those of ordinary visible red light and shorter than those of microwaves or radio waves. Infrared energy is in the wavelength range of approximately 1µm (micron) to 15µm.

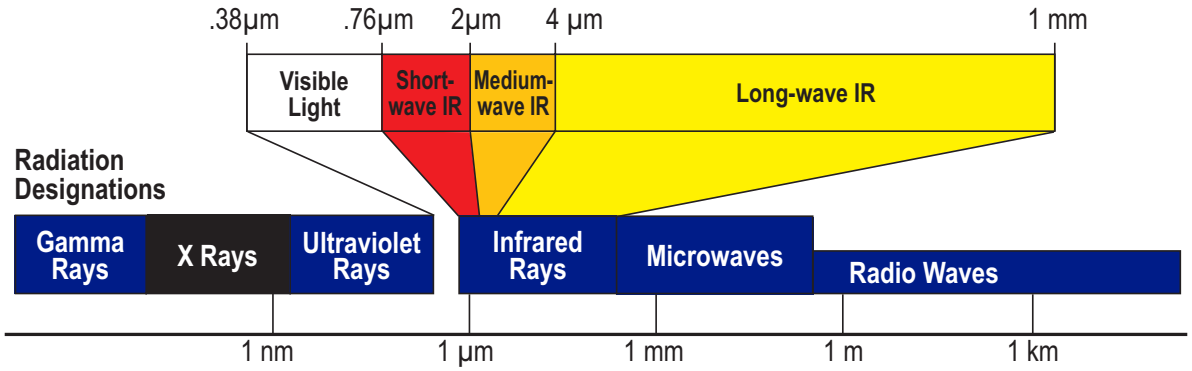
The largest infrared emitter in our solar system is our Sun. The way the sun's energy feels on your skin is the best reference as to how infrared energy can be utilized effectively in your industrial process.

Would you rather be snowboarding in Colorado on a cloudy day or sunny day?

Since the sun's infrared energy can "see" you more readily on a sunny day, it provides direct, radiant warmth despite the cold ambient temperature.

Table 1 shows the electromagnetic spectrum and the relationship in wavelength to other forms of energy such as visible light.

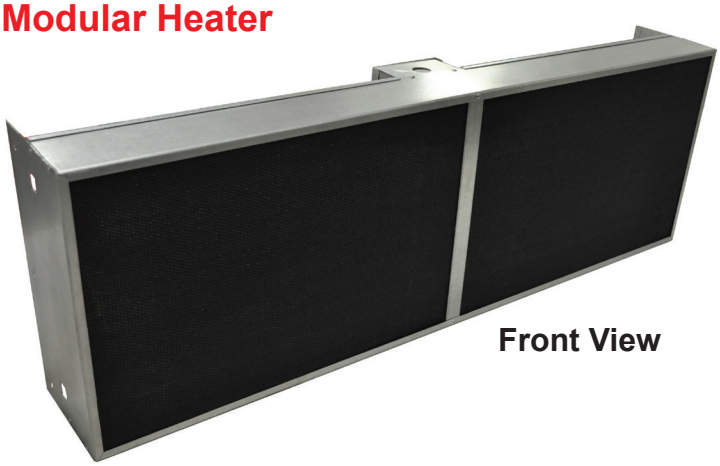
Table 1



Infrared energy technologies are often misrepresented and applied incorrectly due to misinformation and a general lack of understanding. This is where the value of using a strong partner such as INTEK is invaluable in your process heating application.

Unlike standard convection heating systems which heat an object indirectly using heated air as a transfer medium, infrared systems heat objects *directly* by way of radiant infrared energy.

OM-Model Electric Infrared Modular Heater



Front View

Back View

Heater Array OM-Model Electric Infrared Modular Heaters
(quantity 5 shown)

The success of an IR system lies in how it is "tuned" to the object or coating being heated.

What steps do I take to obtain a "tuned" IR system?

Step 1 - Identify thermal properties of material
Theoretical calculations combined with product testing at varying wavelengths (emitter face temperatures) provide the best method for identifying the thermal properties of the product or coating being heated.

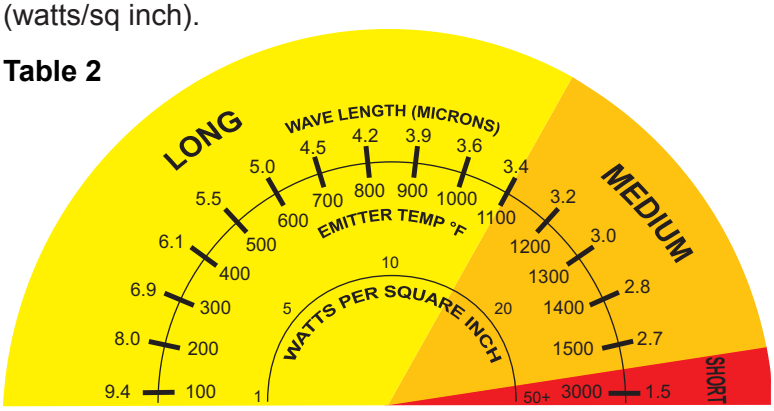
Step 2 - Determine substrate absorption rate
Absorption rate is affected by the material type, emitter wavelength (source temperature), distance from emitter face to the substrate, and IR energy exposure time. Radiant infrared energy will either be absorbed, reflected, or transmitted by the material. A perfectly "tuned" IR system will result in the maximum amount of heat being absorbed into the substrate at the optimal wavelength.

Step 3 - Choose the correct emitter
Once the substrate absorption rate has been calculated or proven by testing, the final step is to specify the appropriate emitter for your process. Refer to the infrared spectrum chart below (Table 2) to determine the correct wavelength range. Call INTEK for a professional recommendation including testing and a free quotation on the heater type and model that offers the greatest amount of controllability and efficiency for your specific process heating application.

Wavelength/Temperature/Energy Relationship

See the following graphic which depicts wavelengths with relation to temperature and energy required (watts/sq inch).

Table 2



**Note – Wavelength is proportional to emitter source temperature. It can be calculated using Wein's Displacement Law which is: Peak energy = 5,269 microns/°R [°R = Emitter source temperature (°F) + 460°F]. Example – 600°F source temperature = 5269/(600+460) = 4.97microns

C-Model Electric Infrared Panel
(shown installed in conveyor oven)

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