

www.osram.com



HALOTHERM[®] Infrared Lamps.

Technical information.

SEE THE WORLD IN A NEW LIGHT

OSRAM



Comparison of common heating methods

In many industries, such as in production, processing, or finishing, infrared radiation has become an important heat source. It is very efficient and can be controlled quickly and precisely, thereby causing minimum stress on the materials and surfaces it comes into contact with. It is indispensable in modern ovens and grills, as well as in commercial heated counter tops for food preparation or displays. It is also successfully used as a zone and space heating system for outdoor and indoor applications.

Heating by radiation

The electromagnetic oscillations – the heat radiation – produced by an infrared lamp are transferred to the product to be heated without contact and without an intermediate medium. Heating is achieved much quicker than with convection because part of the radiation enters the interior of the product directly, in addition to heating its surface. All heating and drying processes are therefore much faster and put less stress on the product than other heating methods, resulting in higher productivity. The energy loss through convection to the air between the product and lamp and through reflection from the heated product is small.

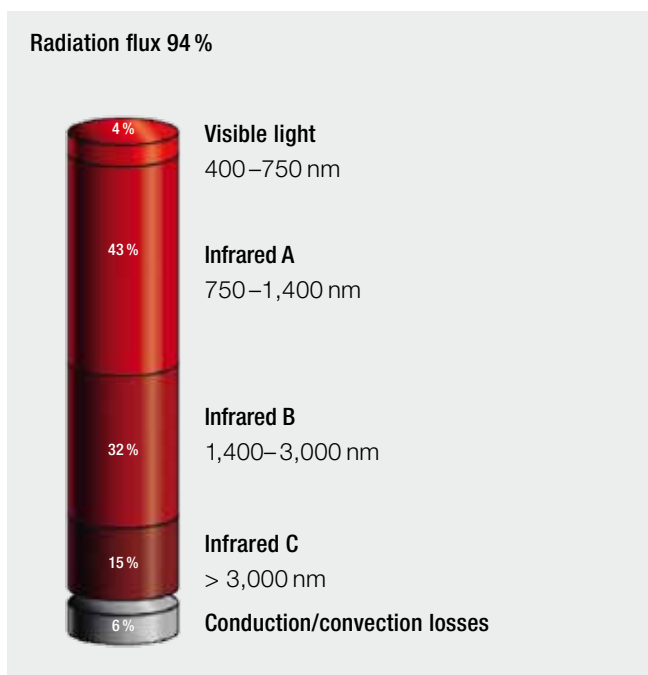
Heating by conduction

This method requires direct contact with the material to be heated. Its usage is therefore severely limited. Heat transfer occurs by direct conduction to the surface and, from there, to the interior of the product to be heated. Since there is only a small energy loss during the heat transfer, the method is suitable for heating thermoplastics only if the material is not too thick. The maximum heating temperature depends on the thermal properties of the processed material.

General information about infrared

A comparison of the various common heating methods shows the significant benefits of halogen infrared lamp technology.

Energy-balanced infrared lamps



TECHNICAL DATA



HALOTHERM® lamps are shortwave halogen IR lamps (IR-A) that have been specially developed for technical applications. They consist of a tungsten heating coil and a quartz tube. The filling contains halogen additives in order to avoid blackening of the lamps and to ensure a longer lamp life. Most of these lamps have a maximum radiation at a wavelength of about 1,100 nm. Quartz glass is highly transparent to infrared radiation up to a wavelength of 4,000 nm, which ensures that the heat radiation is emitted with minimum loss. Important advantages of heating with

HALOTHERM® lamps when compared to other methods such as hot air or dark radiators are quick reaction times, accurate controllability, and high efficiency. They can be installed in machines and production lines with minimum space and maintenance requirements. According to the technical specifications, the lamps are available in different geometrical shapes and with various end connectors. Segmented coil design allows for better control of heat distribution across the lamp.

HALOTHERM®

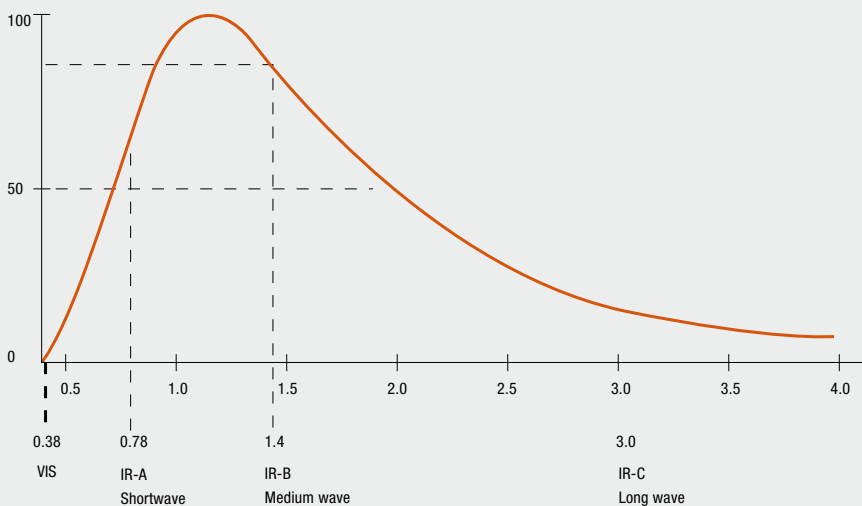
Application

- Processing of plastic and thermoforming
- Paper and printing industry
- Paint drying
- Coil coating
- Outdoor and indoor zone heating
- Catering (CERAN cooking surfaces, heated counter tops for food preparation or display)
- Infrared cabins

Advantages

- Fast heating action with highest efficiency
- Installation with minimum space and maintenance requirements
- High operating safety
- Optimum adjustment and controllability
- Long lamp life

Radiation distribution of HALOTHERM®



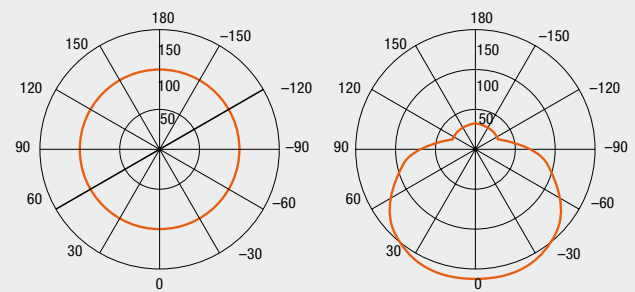


HALOTHERM® with reflector

Lamps with a reflector made of aluminum oxide significantly improve the radiation power on the surfaces to be heated, particularly at short distances. They reflect heat in a forward direction, hence reducing the heating of the system components and the surrounding surfaces behind the lamp. The result is a more efficient and controlled heating process.

HALOTHERM® with reflector

Relative radial power distribution in %



Lamp without reflector

Lamp with reflector

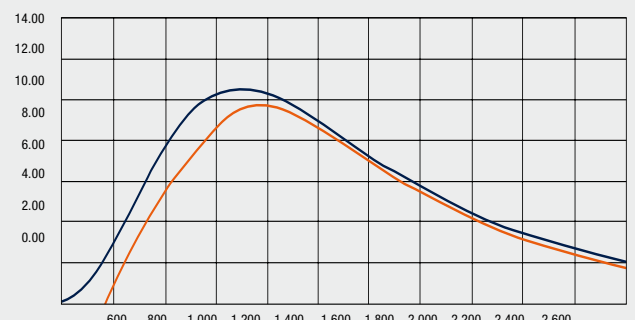


HALOTHERM® with ruby quartz – RUBYSTAR™

Lamps made of ruby quartz predominately emit infrared heat radiation with reduced transmission of visible light. They are used where typically visible light would interfere, or in applications where only heating is required, e.g. outdoor and indoor zone or space heating and auto/marine service or repair shops for drying/curing paint.

HALOTHERM® with ruby quartz – RUBYSTAR™

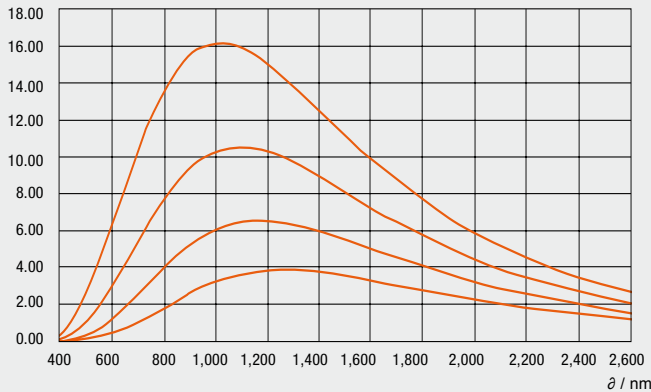
Transfer of emission spectrum by ruby quartz



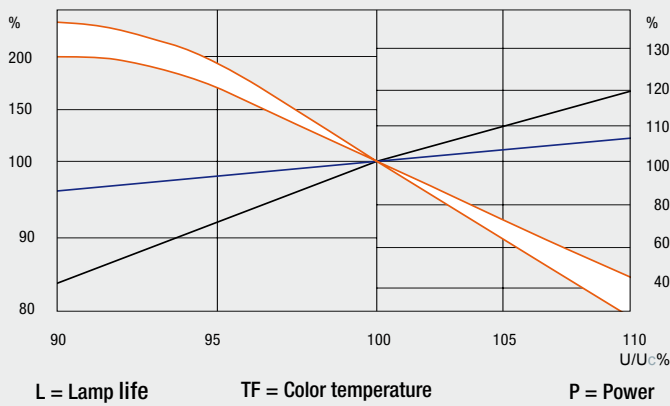
wavelength λ / nm

TECHNICAL DATA

Tungsten emission for four different true temperatures



Operating characteristics



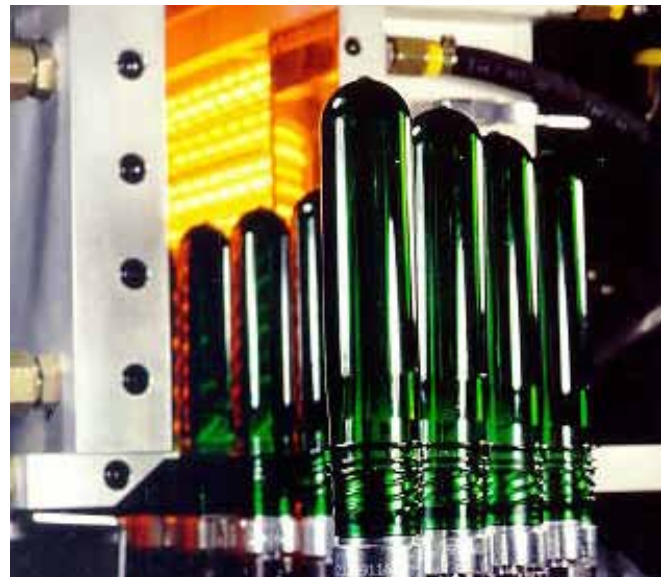
Operating position



Operating notes

HALOTHERM® lamps are made of quartz and should not come in contact with substances containing sodium. They should never be touched with bare fingers, since oils and other residue cause diversification of the quartz, which leads to premature lamp failure. Prior to operating the lamp, any fingerprints must be removed by using a suitable cleaning solvent. Lamps are sensitive to torsion forces, i. e. the lamp must not be clamped at the seals during installation. During operation, tensions caused by different expansion coefficients must be avoided. According to EN 60061-2, the contact force of lamp holder' R7 shall be between 20 and 35 N. Lower contact pressure can lead to corrosion, while higher pressure can lead to deformation of the lamp.

Power cables must be installed at a sufficient distance from the lamp. A minimum of 3 mm is recommended. As with all halogen lamps, excess voltage reduces lamp life.





Radiation risk



Protect from shower water



Attention: hot



Do not touch the lamp with bare hands



Fuse, quick-acting



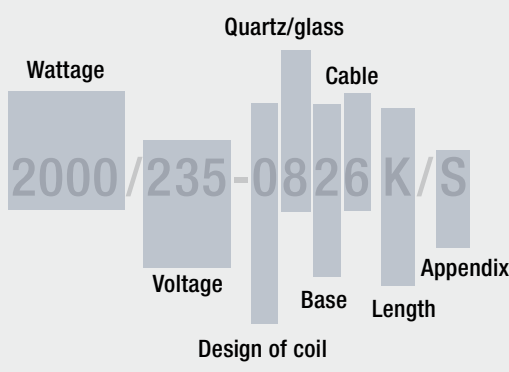
Dimming type













Disconnect luminaire when changing lamps

HALOTHERM®

ITT 2000/235-0826 K/S



Design of coil	Quartz/glass	Base	Cable
0 Filament not in segments	0 Ruby quartz	0 No socket, cable in 90° 	0 No cable
1 Filament in segments	1 Normal quartz	2 K9 x 15/21, cable in 90° 	1 Cable unterminated
	6 Frosted quartz	7 R7s 	2 Cable with loop/ring 
	8 Coated with white reflector	X Metal strip, according to EN 60240-1 	3 Cable with flat pin bushing/tab 
		Y Metal strip, special design 	6 Cable with thimble/fork 
		Z Metal strip, special design, bent 	8 Cable with wire end sleeve/splice 

Length:

K = Short version

M = Medium version

L = Large version

Appendix:

S = Burning position any

SEE THE WORLD IN A NEW LIGHT

