

APPLICATIONS



PLASTIC
AND RUBBER





Founded in 1940, Helios Quartz Group has been a family-owned company with two production plants in Italy and Switzerland combined with offices in the USA, South America, and Asia to become a major international supplier for Quartz Glass processing and the manufacturing of IR & UV Lamps. Helios Quartz also produces Specialized Equipment for Industrial, Scientific, and Medical applications.

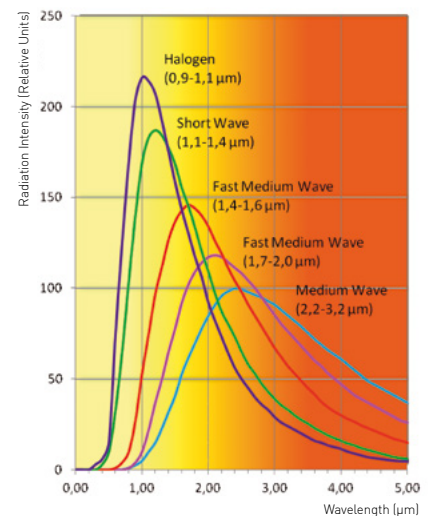
Helios Quartz is one of the leading companies worldwide in the plastic industry for the supplying of IR quartz emitters in short, medium and fast medium wavelength; quartz glass tubes and plates; UV lamps and apparatus for the polymerization (curing) of glues, inks, varnishes, enamels and resins that react with the UV light.

INFRARED QUARTZ EMITTERS

Infrared emitters heat up the material through radiation, therefore the process happens in a direct way and with high efficacy; according to the material to be heated it is possible to choose different IR wavelengths in order to reach the maximum energy propagation and obtain the heating in a faster and more efficient way. Furthermore, thanks to their short on/off response time, they allow very precise regulations that can be adjusted according to the different needs of the materials involved in the process.

The picture shows all the radiation intensity curves for halogen, short wave, medium and fast medium wave emitters.

To better convey and focus on the material all the energy emitted by the lamp, it is possible to apply a special reflector directly on the quartz tube; Helios Italquartz offers the possibility to apply a gold, white or ruby reflector.





IR **HALOGEN** QUARTZ EMITTER

The IR Short Wave radiation is positioned in the range of 0,9 e 1,1 μm . The Halogen radiation has a very high heating power and very fast on/off response time.

IR **FAST MEDIUM WAVE** QUARTZ EMITTERS

The IR Fast Medium Wave radiation is positioned in the range of 1,4 e 1,6 μm . This emitter is the optimal compromise when one specific application requires at the same time the IR radiation of the Medium Wave emitters and the fast response time in the switching on / off similar to the Short Wave emitters. It is available in twin tube up to 6,5 meters long.

IR **SHORT WAVE** QUARTZ EMITTERS

The IR Short Wave radiation is positioned in the range of 1,1 e 1,4 μm . This emitter is characterized by high heating power and it is particularly recommended in those cases where it is important to have a fast response switching on and off time. It is available in twin tube up to 6,5 meters long.

IR **MEDIUM WAVE** QUARTZ EMITTERS

The IR Medium Wave radiation is positioned in the range of 2,2 e 3,2 μm . This emitter is particularly suitable for the fast heating of surface parts or thin thickness materials. It is available in twin tube up to 6,5 meters long.





UV HIGH PRESSURE LAMPS

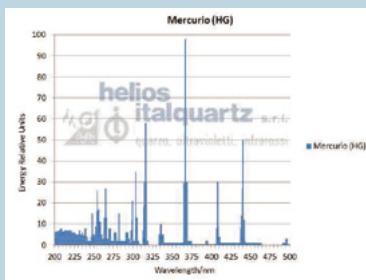
UV technology represents one of the major innovations in the development of polymers, in the UV process high-intensity ultraviolet light is used to cross-link resins in varnishes or inks. During conventional cross-linking hot air fosters the aggregation of polymers in the solvent, which evaporates due to the high temperature. The cross-linking process occurs thanks to a beam of ultraviolet light activating some substances (called photoinitiators) present in the product; these trigger off a reaction of polymerization, which occurs in a very short span of time (1-2 seconds).

Helios Quartz manufactures UV curing lamps up to 2,5 meter length with power ratings range from 80 Watt/cm up to 300 Watt/cm.

For the plastic industry Helios Quartz S.r.l. produces:

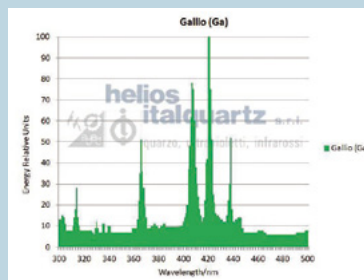
UV HIGH PRESSURE MERCURY LAMPS

The emission of UV High Pressure Mercury lamps covers all ultraviolet range (UVA, UVB and UVC) with the emission peak in UVA region at 366 nm.



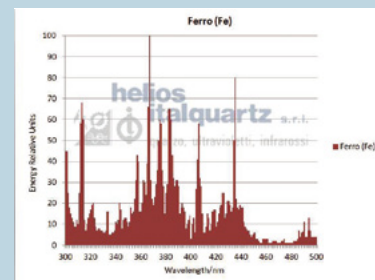
METAL HALIDE UV HIGH PRESSURE LAMPS GALLIUM DOPED

The Metal Halide Lamps, which emit high-power UV radiation specific for the plastic Industry applications, are Gallium [Ga] doped lamps with the emission peak in UVA region at 420 nm.



METAL HALIDE UV HIGH PRESSURE LAMPS IRON DOPED

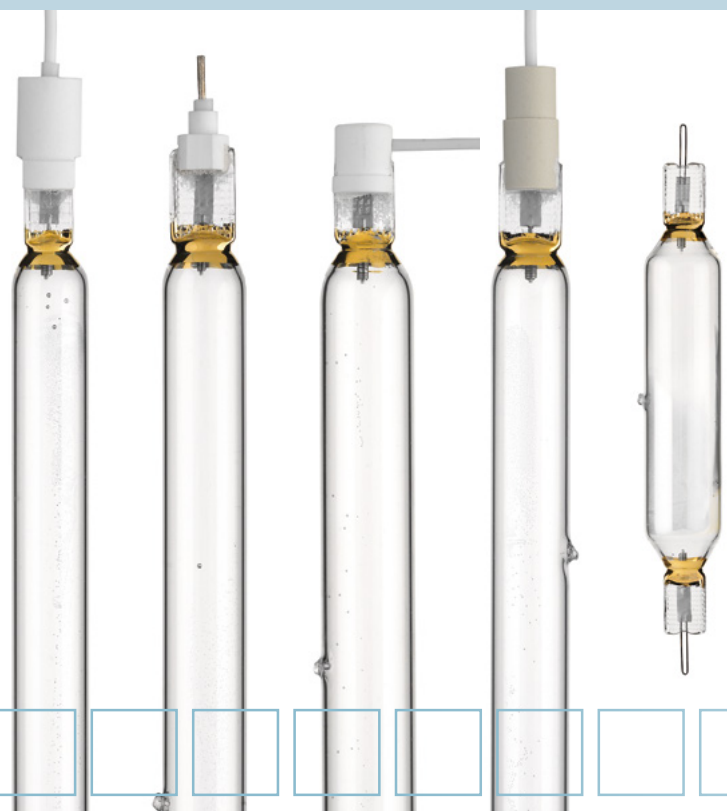
The Metal Halide Lamps, which emit high-power UV radiation specific for the plastic Industry applications are Fe doped lamps with the emission peak in UVA region at 366 nm and 440 nm.



All the lamps produced by Helios Quartz are available with different specifications/configurations and in Normal quartz or Ozone-Free quartz.

Helios Quartz can produce UV high pressure lamps suitable for almost all of existing UV curing equipment; below there is a list of information needed for the spare parts service:

- Electrical data [Power [W], input tension [$V_0 - V_L$] or input current [$A_0 - A_L$]]
- Arc length
- Total length of the lamp (with caps)
- Tube diameter
- Length of the wires and what kind of electrical connection requested
- Ozone producing lamp Yes/No
- Type of caps (sketch)
- Reference Nr of the lamp to substitute





QUARTZ GLASS

The Fused Quartz Glass SiO_2 is unique material because of its high level of purity and its extraordinary mechanical, electrical, thermal, chemical and optical properties. The choice of quartz glass is not casual; in fact this extraordinary material is quite perfectly transparent at IR and UV radiation; it resists to

constant working temperature of more than 1000°C and to all chemical agents and it is not subject to the phenomenon of thermal shocks.

Helios Quartz produces quartz glass plates up to 2500 mm length and quartz glass cooling tubes on customer's drawings or specifications. In according to the different applications, Helios Quartz recommends the appropriate type of quartz glass in order to optimize the IR or the UV quartz glass permeability. For special applications we are able to supply to our customers also synthetic quartz.

Helios Quartz produces all kind of quartz plate with customized surface finishing such as optical polishing, mechanical polishing, flame polishing.

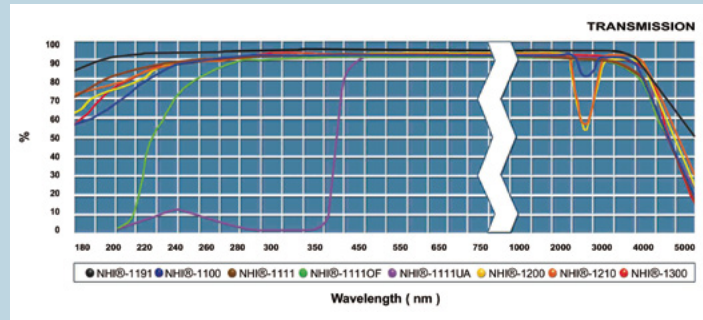
The following graph shows the transmission curve of the different qualities of quartz glass.



Quartz plates



Clear quartz tubes



INVE APPARATUS - AGEING TEST SIMULATOR

INVE 2000 apparatus has been developed and built to determine in laboratory the degree of resistance and ageing time of any kind of material (solid or liquid) by exposing it to ultraviolet and infrared artificial rays instead than to natural sunlight.

INVE 2000 thanks to its perfect quality/price ratio, flexibility and ease of use is well appreciate also in plastic and rubber industry. Helios Quartz can provide customers greyscale and bluescale.

The test is made placing the material under a uniform irradiation process; the constant and intense light sources is studied in order to obtain an ageing power from 30 to 50 times higher than the natural sun rays allowing a quick test which estimates rapidly and clearly the temporal behavior of the tested material.



helios quartz





MODULES AND SYSTEMS

Helios Quartz in according to customer's specific requests produces IR modules and UV kits.

IR MODULES



The IR modules manufactured by Helios Quartz are completely cabled, equipped with thermal sensor for high temperature and already prepared to accommodate the infrared quartz emitters.

The stainless steel panels are designed by Helios Italquartz technical team in order to guarantee the most thermal and mechanical stability in all working conditions. Moreover, Helios Quartz, working together with its customers, customizes the modules design in according to the specific requirements of the applications and provides costumers modules suitable to be fitted up to costumers new and existing lines.

In according to customers requirements, Helios Quartz, can provide the whole solution to almost every thermal process providing IR modules and systems up to 6.5 meters length equipped with temperature control system, air or water cooling system, computer control panel, etc..

Our standard IR modules characteristics:

- Designed for ventilation fan
- Designed for mechanical hooks for installation
- Designed for housing temperature sensors (optional)
- Equipped with a power controller (optional)

UV KITS

Characteristics:

- Reflectors with or without shutter
- Power supply choke or transformer
- Choke
- Starter / Ignitor
- Capacitor
- Constant Wattage Transformers
- High Temperature Cable
- UV lamp Electronic Power control

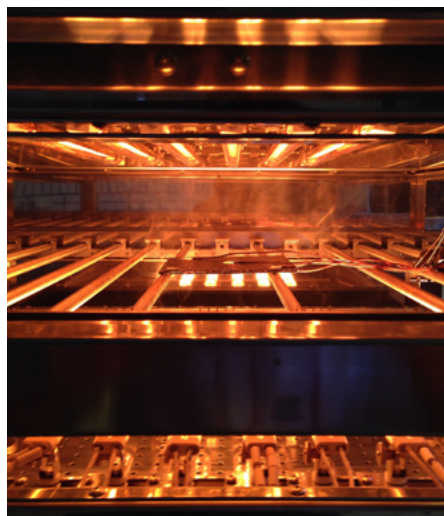
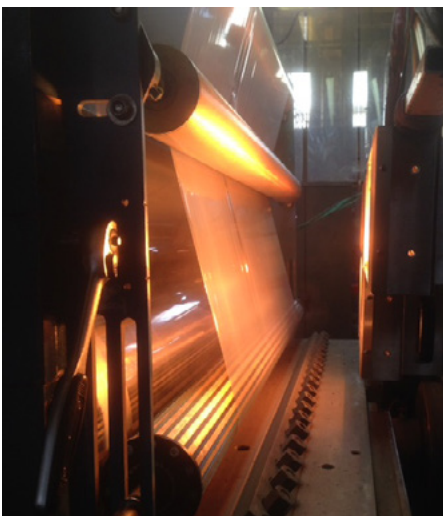
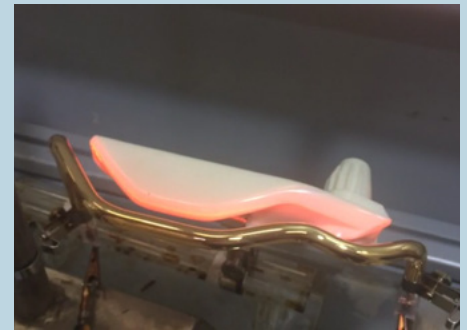
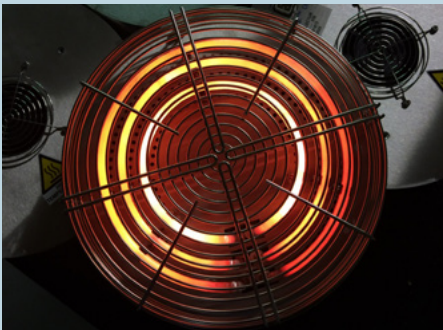
Helios Quartz Technical Department can also design, on customer's specific request, complete UV systems with different wavelengths up to 2,5 meter long for UV polymerization.



APPLICATIONS

Helios Quartz IR emitters and modules production range covers almost all needs in terms of plastic forming and processing, below we remark some typical applications like:

- Welding of plastic parts
- Heating of prepreg composite materials
- Laminating
- IR heating for PET preforms (blowing machine)
- Shrinking of plastic foil
- Stretching of plastic films
- Thermoforming of plastic parts
- Deburring of stamped parts
- Embossing process
- Drying of plastic pellets
- Crystallization and drying of PET, PPS, PLA
- Curing of paints on plastic
- Softening process
- Forming process
- Bending process
- Vulcanization processed in rubber industry
- Drawing of plastic tubes
- Sealing process
- Gluing process
- etc.





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