



Mini L.E.D.™





Until now halogen-type lamps could only polymerize by producing a great deal of heat for a few efficient wavelengths (on average $500\text{mW}/\text{cm}^2$ in the utilizable wavelength).

The maximum emitting spectrum of halogen lamps (over 480nm) is not relevant to the optimal absorption zone of the photo-initiators used in dentistry (approx. 430 to 470nm).

The latest generation L.E.D. (Light Emitting Diode) curing lights offer all that is expected of this new technology and the most recent design developed by Satelec® combines power, efficiency and speed:

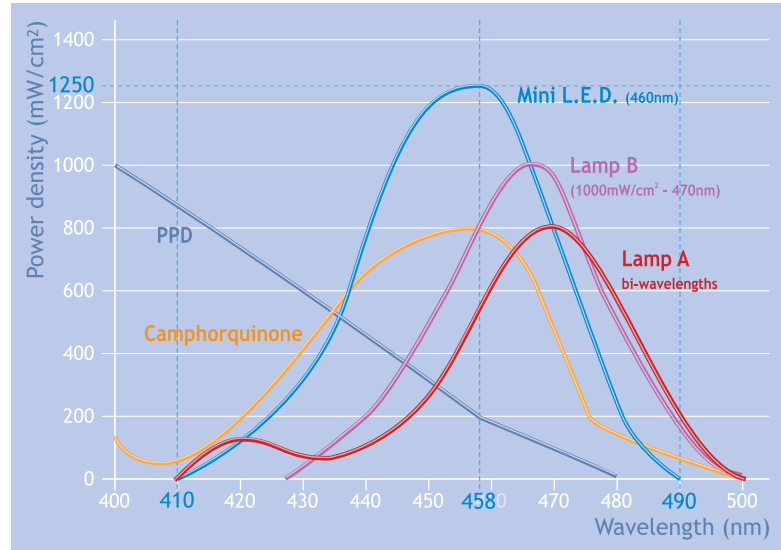
- its power ($1,250\text{mW}/\text{cm}^2$) is greatly superior to that of most other lamps and nearly as efficient as plasma lamps, with no rise of temperature;
- it emits light in the most efficient part of the spectrum, suiting most composites currently available: camphorquinone (470nm), PPD or PAB (430nm);
- it takes only 6 to 12 seconds to polymerize a 2 to 3mm thickness of any composite !

**Design by Prof. François Duret, DDS DSO-PhD, MS, MD-PhD, inventor of the CAD-CAM and the Apollo plasma lamp.*

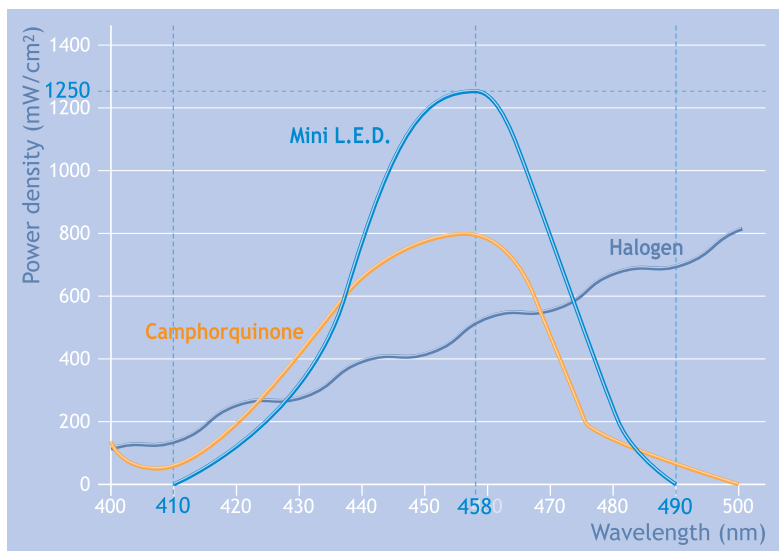


Power and emitting spectrum

Mini L.E.D.'s power of $1,250\text{mW/cm}^2$ and the central position of its emitting spectrum make this lamp much more effective than most of the others on the market, whether the comparison is with those that emit at two wavelengths (420 and 480nm) or with those that emit at only one (470nm). It is therefore suitable for activating any of the composite photoinitiators on the market: camphorquinone (at 470nm) and also PPD and the PABs (at 430nm).



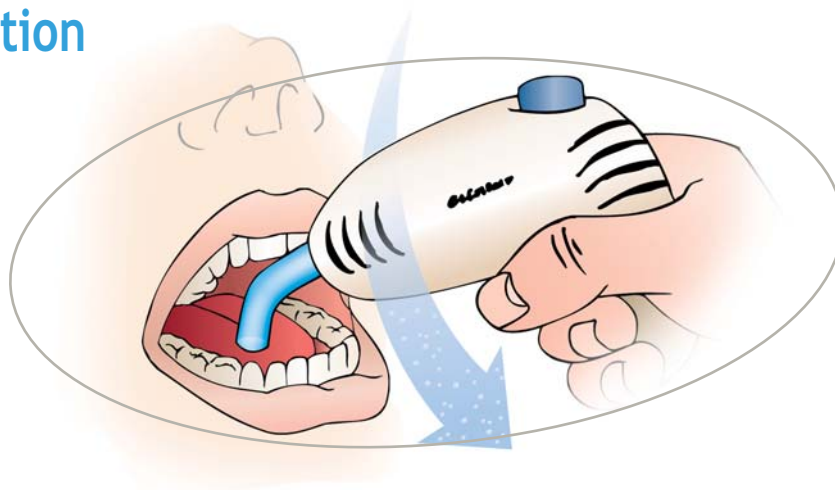
Effectiveness and cold light



Mini L.E.D. emits a spectrum of blue light ideally suited to all the photosensitive compounds that facilitate hardening of composites. Unlike halogen lamps, which use only 20% of the energy produced - the rest being lost as heat - **100% of Mini L.E.D.'s energy will be used to cure the dental composite.**

Hygiene and protection

Mini L.E.D., because there is no cooling* and no opening (for a fan), it avoids the development of a stagnant environment and microorganisms that could produce cross-infection between patients and the dental care team. It acts as an everyday link in the aseptic chain of meticulous and vigilant protection against the risk of nosocomial infection.



* Satelec Worldwide Patent.

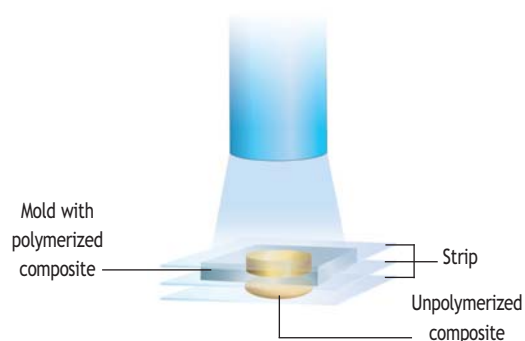


Light diffusion at the heart of the composite

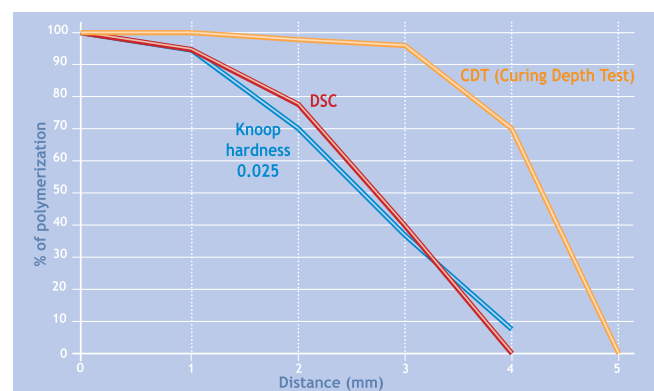
Differential Scanning Colorimetry (DSC) method

There are a number of methods commonly used to ascertain the effectiveness of a lamp: power density, depth of curing, hardness (Knoop, Vickers or Barcol), and analytical measurement using differential scanning calorimetry (DSC). Today, DSC is the best scientific method, and the most reliable for ascertaining whether a lamp is effective in polymerizing (curing) dental composites.

DSC is simple in principle, but implementing it is very complex. When a dental composite is burnt, the measured (or residual) heat released by the composite is proportional to the quantity not polymerized. It is 100% if there has been no polymerization and around 30% if there has been complete polymerization. If this residual heat is no more than 35%, we consider the polymerization to have been properly carried out, and therefore that the lamp is effective (taking account, in the value, of post-polymerization).

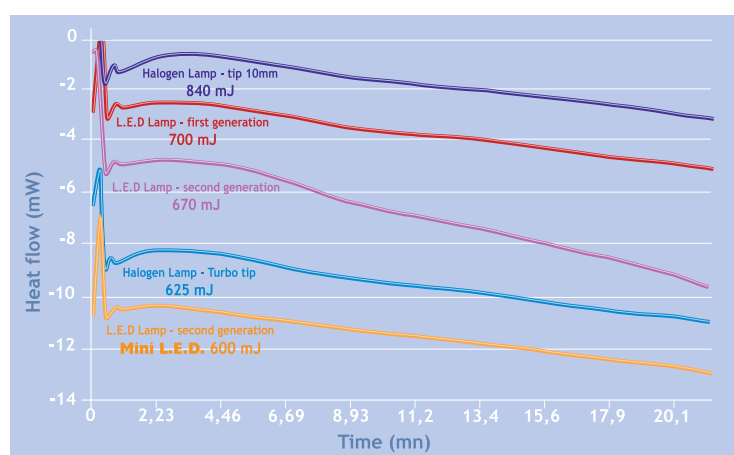


A small piece of unpolymerized composite is placed under various thicknesses of completely polymerized composites, in order to study the influence of thickness on the lamp's effectiveness. Measurements are made on the unpolymerized composite.



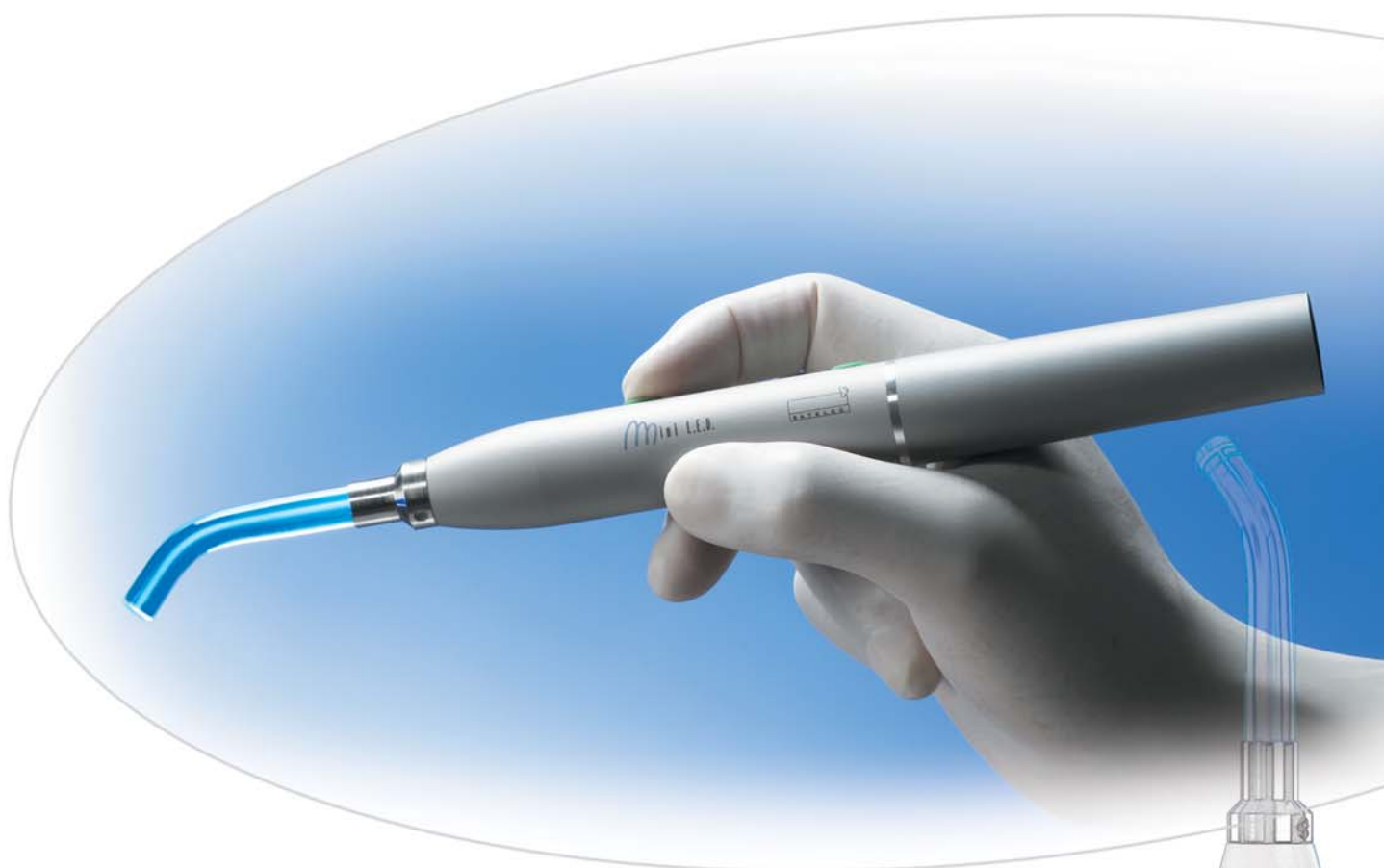
We measure the depth of curing, hardness (Knoop 0.025 or Vickers) and residual heat (using DSC) at various depths (every 500µm), for 10, 20 or 30 seconds, with each of the three Mini L.E.D. menus. The measurements show that 10 seconds suffice for the Mini L.E.D. to polymerize virtually all of the composite to a depth of 2.5mm.

Important! Depth of curing (using the CDT) is a poor indicator, as it can make you think that a lamp is polymerizing to a depth of 5mm within 10 seconds, which is in fact impossible.



This graph, representing four experiments, provides visual and scientific evidence of the indisputable effectiveness of Mini L.E.D.. As can be seen from these DSC data, when compared with most of the lamps available on the dental market (halogen lamps and other LED lamps), Mini L.E.D. is the one that leaves the smallest amount of unpolymerized composite to burn: 600 millijoules (mJ).

Mini L.E.D. cures dental composites much more effectively, both at the surface and at the heart of the reconstitution material, and thus proves to be greatly superior to most other lamps after only 10 seconds' exposure.



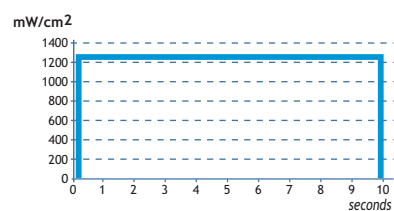
Mini L.E.D.

1,250mW/cm²

CORDLESS - NOISELESS - LIGHTWEIGHT

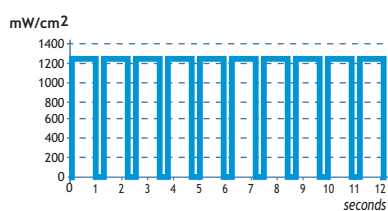
Three modes

for optimal curing of all types of composites:



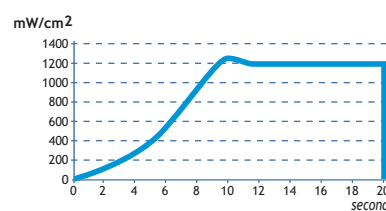
Fast mode

Emits at full power for 10 seconds (audible signal after five seconds).



Pulse mode

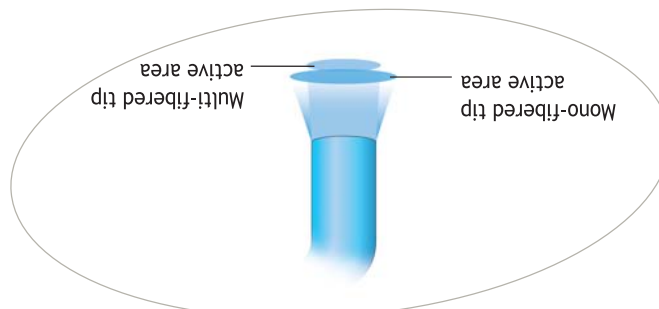
Emits 10 successive one-second flashes at full power (audible signal after five flashes).



Ramping mode

Emits 20 seconds progressively up to full power (audible signal every five seconds).

Polymerization of all types of composites (2 to 3mm) in just 6 to 12 seconds!



A tip for every procedure

Mini L.E.D.



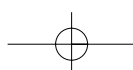
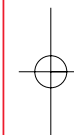
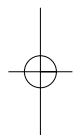
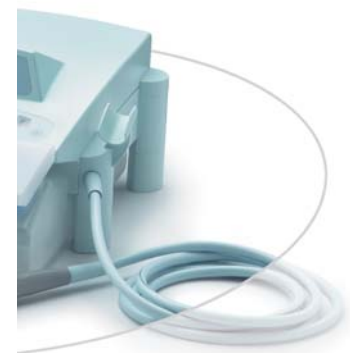
Best quality materials

- Mono-fibered and multi-fibered glass light guides in different diameters for various applications.
- Anodized aluminum handpiece.
- Latest generation of SMD electronics.
- Very high-quality single LED built into a patented optic module.
- Li-Ion battery with no memory effect means 350 successive cycles before needing to recharge (a capacity of at least one week's work).*

Design and ergonomics

- Rounded surfaces allow for easy and comfortable manipulation.
- Compact, lightweight (160g) and well-balanced.*
- Silent and hygienic : no fan.
- Light guide rotates through 360°.
- Base-charger can be turned in all directions and features stand-by indicator and low battery warning.*
- Built-in radiometer (efficiency tester).*

*Valid for the table top version (Mini L.E.D. and Mini L.E.D. ORTHO).





Mini L.E.D.[™] ORTHO

You have the power !

Mono-fibered 5.5

Amplifying light guide
for fast, powerful and accurate curing at:
2,000mW/cm²

Three exposure times

for optimal curing :
12 sec. / 8 sec. / 4 sec.

With **Mini L.E.D.[™]** you can select the right time
for the different types of material you wish to cure, their speed of
reaction, and the clinical protocol you are following.





Mini L.E.D.TM SP

Ultrasound in its true light

Mini L.E.D.TM SP is compatible with all Satelec ultrasonic generators driven by the SP4055 and SP Newtron modules (table-top or built-in devices).

Mini L.E.D.TM SP is equipped with an adapter to connect it (exclusive license under the patent by Mectron S.r.l.) to Satelec generators instead of the scaler handpiece:

- Full power mode only of 1,100 mW/cm².
- Light source is activated by simply pressing the generator foot switch.

The clinical applications of the Mini L.E.D. SP are identical to those of the standard Mini L.E.D. table top device.





Mini L.E.D. OEM

The built-in performance

For perfect control of your unit, *Mini L.E.D.* is also available in a version that can be integrated with or without a module. This version has the same features as the table-top device.



- **Three modes** : Fast - Pulse - Ramping
- Power of **1,250 mW/cm²**
- Polymerization of all types of composite (2 to 3mm) in **6 to 12 seconds**.



Mini L.E.D.

Specifications and accessories



Technical specifications

Mini L.E.D. and Mini L.E.D. ORTHO

Unit
 Size: Ø 23 x 200mm
 Weight: 160g
 Classification: ordinary, type B,
 intermittent service
 II, IPXO
 Working voltage: 100-250 V AC, 50-60 Hz

Base
 Voltage: 12 V DC
 Protection: 2 A earthed fuse
 Classification: continuous service

Battery
 Type: Lithium-Ion
 Capacity: 2,000 mAh

Mini L.E.D. OEM

Size: Ø 23 x 180mm
 Weight: 95g
 Classification: I, type B,
 permanent service,
 IPXO

Mini L.E.D. SP

Size: Ø 23 x 180mm
 Weight: 130g
 Classification: I, type BF,
 continuous service
 IPXO

Optical specifications (with mono-fibered Ø 7.5mm light guide)

Wavelength: 420-480nm
 Power:
 Mini L.E.D., Mini L.E.D. ORTHO, Mini L.E.D. OEM: 1,250mW/cm²
 Mini L.E.D. SP: 1,100mW/cm²

Standards

CE, IEC 60 601-1/60 601-1-2

Accessories

Mono-fibered Ø 7.5mm light guide Ref.: F 02550
 Opalescent Ø 7.5mm light guide Ref.: F 02648
 Mono-fibered Ø 5.5mm light guide Ref.: F 02551
 Opalescent Ø 5.5mm light guide Ref.: F 02652
 Amber Ø 3.5mm light guide Ref.: F 02651
 Straight mono-fibered Ø 5.5mm light guide ... Ref.: F 02650
 Protective light shield Ref.: F 02555
 Transformer (EEC)* Ref.: F 02543
 Battery Ref.: F 02520
 Handpiece holder Ref.: F 02463

*available in other voltages: please contact your local dealer
 or satelec@acteongroup.com for details.

Non contractual document - Ref. D02521 - P4 - Copyright © 2005 SATELEC. All rights reserved. No information or part of this document may be reproduced or transmitted in any form without the prior permission of SATELEC.

