INSTRUCTIONS FOR USE

Thank you for purchasing the Radi-cal LED curing light. The Radi-cal is a powerful, cordless, lightweight curing light using an LED for the polymerization of composite and restorative materials that contain the photo-initiator Camphorquinone. The Radi-cal produces a strong blue light in the wavelength range of 440 – 480 nm, the relevant range for Camphorquinone containing products.

PRODUCT CONTENTS LIST
- Handpiece
- Radiometer
- Radiometer indicator
- Battery pack
- Charger
- Handpiece
- Control section
- Ovelfold button
- Lens cap
- Light shields (5 Pack)

OPERATION

1. Turning unit on and off

Simply pick up the curing light handpiece, press the on/off button once to activate and deactivate the light. Audible beeps facilitate accurate time measurement of curing. Replace the Radi-cal back in the charger when not in use.

2. Audible beeps

An audible beep will be heard after the first 15 seconds (5 second ramp, 10 seconds full cure) and three audible beeps after an additional 10 seconds etc. The full cycle will continue as follows;

- 1 short beep 15 sec
- 2 short beeps 10 sec 5 sec
- 3 short beeps 10 sec 3.5 sec
- 4 short beeps 10 sec 4.5 sec
- 5 short beeps 10 sec 5 sec
- 1 long beep 10 sec 65 sec

At the end of 65 seconds, one long beep will be heard before the blue LED is automatically switched off.

3. Lens Cap

The Radi-cal has been supplied with a lens cap fitted. The lens cap should be inspected prior to each use for scratches, cracks or foreign matter that may reduce the effectiveness of the LED light source. Generally lens caps should be replaced every 2 weeks. To remove the lens cap carefully unscrew the old lens cap counter-clockwise and fit the new lens cap by tightening clockwise.

4. Built-in Radiometer

The Radi-cal’s built-in radiometer provides a simple test to check the functionality of the unit. With the Radi-cal on, carefully position the lens cap on the built-in radiometer. 4 or 5 lights should illuminate indicating a fully functional unit. If only 1, 2 or 3 lights illuminate, it could be due to the following reasons;

1) There could be some material on the lens cap such as composite: - the lens cap should be replaced.
2) The lens cap could be damaged or cracked: - it should be replaced.
3) The battery could be extremely low: - the unit should be recharged.
4) In a severe case the light could be malfunctioning: - the unit should be serviced.

5. Automatic shut off function

Should the Radi-cal’s LED become too hot due to excessive use (after about 4 minutes of continuous irradiation), the unit will automatically shut off and be unusable for about 1 minute until it cools down.

6. Changing the battery pack

Carefully unscrew the battery pack counter-clockwise to remove and replace. A single beep will be heard when the battery pack is successfully connected.

7. Cleaning the Radi-cal

The ideal way to protect patients from cross-infection is to utilise Radi-cal barrier sleeves. Barrier sleeves are also essential to keep the Radi-cal handpiece clean. When cleaning the Radi-cal handpiece, ensure control section, lens cap and battery pack are connected as one unit.

8. Liquid Management

Liquid contact with terminals of handpiece and charger will cause damage or voiding warranty.

General Surface Cleaning

General surface cleaning can be conducted with anti-microbial surface disinfectants such as Glutaraldehyde, Chlorhexidine gluconate, and 70% Isopropyl alcohol. When applying the disinfectant to any component of the device, spray the disinfectant onto a piece of cloth and wipe over the external areas to be cleaned.

Curing Times

Curing times will differ for different formulations of composite restorative materials. Follow the manufacturers instructions for recommended curing times. Always bench test new materials before use in vivo.

Disposal of battery pack

As a means of protecting the environment, the Radi-cal battery pack is fitted with a Lithium Ion battery. Dispose of battery pack in accordance with local legal regulations.

TECHNICAL DATA

Handpiece (battery, control section and standard LED attachment)
- Wavelength range:
  - 440 nm – 480 nm
- Peak wavelength range:
  - 460 nm
- 8AMP to full intensity:
  - 5 seconds
- Light intensity:
  - 1200 mW/cm2 (peak)
- Continuous use:
  - 60 seconds
- Total cure time:
  - with fully charged battery:
    - 3 hours, 20 minutes
  - Fresh batteries:
    - 22mm diameter x 243mm long
  - Dimensions:
    - 144g x 7.1 inches
  - Weight:
    - 1 x 4.2V Lithium Ion – 1200 mAh

Plug Pack

- Input voltage:
  - 90 – 245 V / 50-60 Hz
- Output voltage:
  - 12V DC
- Output current:
  - 750 mA
- Dimensions:
  - 70mm high x 45mm wide x 50mm long
- Weight:
  - 80g / 2.82 oz

Charger

- Time to charge:
  - 60 – 180 minutes
- Operation temperature:
  - 10°C – 30°C
- Dimensions:
  - 25.95mm x 24mm x 130mm long
- Weight:
  - 84g / 3 ounces

REPLACEMENT PARTS AND ACCESSORIES

Replacement parts and accessories which can be installed without special training or equipment, can also be obtained from your authorized SDI dealer.

PRODUCT CONTENTS LIST

- Radiometer
  - Battery pack (25 Pack)
  - Banner sleeves (1000 pack)
  - Handpiece (5 Pack)
  - Radi-cal Control Section
  - Radi-cal Battery
  - Radi-cal Charger (includes plug pack)
  - Light shield (5 Pack)
  - Battery (5 Pack)

TROUBLE SHOOTING

<table>
<thead>
<tr>
<th>Problem</th>
<th>Causes</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charge light flashes</td>
<td>Possible battery fault</td>
<td>Replace battery</td>
</tr>
<tr>
<td>Charge light flashes then goes off</td>
<td>Low battery</td>
<td>Replace battery</td>
</tr>
<tr>
<td>No lights on the radiometer</td>
<td>The battery is dead</td>
<td>Replace battery</td>
</tr>
<tr>
<td>1 short beep 15 sec 15 sec</td>
<td>- Radiometer LED should show either red or green, the blue radiometer LEDs should turn on/off.</td>
<td></td>
</tr>
<tr>
<td>2 short beeps 10 sec 4.5 sec</td>
<td>- Check power is getting to charger, turn power outlet on. - Radi-cal LED should momentarily show red and the 5 blue radiometer LEDs should turn on/off.</td>
<td></td>
</tr>
<tr>
<td>3 short beeps 10 sec 3.5 sec</td>
<td>- Check the power outlet is turned on, if so use a different power outlet.</td>
<td></td>
</tr>
<tr>
<td>4 short beeps 10 sec 2.5 sec</td>
<td>- Check the plug pack is correctly connected to the charger.</td>
<td></td>
</tr>
<tr>
<td>5 short beeps 10 sec 1.5 sec</td>
<td>- Check that the hand piece is placed into the charger correctly.</td>
<td></td>
</tr>
<tr>
<td>6 short beeps 10 sec 1.5 sec</td>
<td>- If the problem still exists after checking 1, 2, 3 and 4 above the charger may be faulty. Return the Radi-cal and charger to the supplier or service.</td>
<td></td>
</tr>
</tbody>
</table>

Do not use the Radi-cal in patients or by users with:
- heart pacemaker implants who have been advised to be cautious in regards to exposure to small electrical devices.
- a history of photo biological reactions (including individuals with urticaria solans or erythroptrophic photoporphyrin or who are currently on photo-sensitizing medication (including B-methoxypsoralen or dimethylaminopropionyl). |
- a history of cataract surgery. These people may be particularly sensitive to the exposure to light and should be discouraged from Radi-cal treatment unless adequate safety measures, such as the use of protective goggles to remove blue light, are undertaken.
- a history of retinal disease. These people should seek advice from their ophthalmologist prior to operating the unit. In operating the Radi-cal, this group of individuals must take extreme care and comply with all safety precautions (including the use of suitable light-fitting safety goggles). |

WARRANTY PERIOD

The Radi-cal, the manufacturer, extends a two year warranty against defects in materials or workmanship to the original purchaser of this product. The manufacturer agrees to correct any defects which develop within the warranty period, either by repair or replacement, at its option. This warranty is valid providing factory inspection indicates that any such defect developed during normal and proper use subject to the conditions below.

WARRANTY CONDITIONS - PLEASE READ CAREFULLY

Please fill out the warranty card included in kit and send promptly to manufacturer. All correspondence concerning the product should specify the model and serial number.

a) Claims for damage in shipment should be filed promptly with the transportation company.

b) All shipments claimed defective can only be returned to the manufacturer with the written consent of the manufacturer. All returned products must be accompanied by a full description of discrepancy or malfunction.

c) Only the authorized service personnel are allowed to carry out repairs to the Radi-cal. Manufacturer shall be released from all obligations under this warranty if repair is carried out by persons other than Manufacturer’s own or authorized service personnel.

d) Use only SDI supplied parts to replace defective components. The warranty product does not cover any damage resulting from the use of third-party replacement parts.

e) Manufacturer shall be released from all obligations under this warranty in the event of improper installation; damage due to casualty; or obvious misuse including but not limited to damage from liquids and autoclaving.

f) Manufacturer shall in no event be liable for any consequential damages arising from the misuse of the product.

g) Only the above stated warranty shall be applicable, and all other warranties, expressed or implied, are hereby excluded.

All correspondence concerning the product should specify the model and serial number.

CAUTION

- Class II Equipment

- Type B Applied Part

- Transport and storage environment:
  - Ambient temperature: 0°C - 40°C (32°F - 104°F)
  - Relative humidity: 10% - 85%
  - Atmospheric pressure: 0.5 atm - 1.0 atm (500 hPa to 1060 hPa)

- CAUTION (refer to accompanying instructions)