

Frequently Asked Questions:

1. Which mode should I use?

With VALO, you can use the mode you are most comfortable with, or try all three, depending on what's ideal for the procedure. If you are comfortable with a "standard mode," use that. If you want to save six seconds per cure, opt for High Power Mode. If you are interested in or currently using a Plasma Arc curing light, select VALO's Plasma Emulation mode.

Standard, High, and Plasma Emulation—whatever mode you choose, VALO will cure effectively and efficiently every time.

2. Does the heat from VALO's Plasma Emulation (PE) mode affect the tooth?

While VALO's PE mode is able to produce intensity similar to a PAC light, it does not produce the same amount of heat as a PAC light.

The Dental Advisor's Biomaterials Research Center published an article that investigated concerns about heat generated with higher intensity LED lights. In particular, VALO in PE mode and all other curing lights, did raise the temperature of the composite restoration. There are two sources for this temperature rise: the energy emitted from the light, and the exothermic reaction of the composite as it cures. VALO's PE mode did not raise the temperature of the pulp more than .1C*. This was determined by UPI as well, but proved by third parties to be true. This means that it takes the tooth from 98.6F to a mere 98.78F. In order for the pulp to be affected it would need to raise the temperature by at least 5.5 degrees Celsius**. The blood flow of the tooth is its cooling mechanism and is one of the reasons why the pulp is minimally affected

Here's a link to the aforementioned article:

<http://www.dentaladvisor.com/publications/translating-the-science/high-intensity-led-light-curing-units-the-heat-they-produce.pdf?ht>

- *"According to a study by The Dental Advisor, temperature increase within the pulp chamber while using VALO was as follows: Standard Power – 0.8 °C, High Power – 0.0 °C, Plasma Emulation – 0.1 °C" The Dental Advisor (2009). 26
 - **An experiment in which researchers applied soldering irons to monkeys' teeth suggests that raising the temperature of a tooth more than 5.5° C causes irreversible pulp damage in 15% of teeth (Oral Surgery, Oral Medicine, and Oral Pathology, April 1965, Vol. 19:4, pp. 515-530)

3. Does heat from VALO's higher intensity modes affect soft tissues?

VALO's instructions include a warning about placing the beam on soft tissues. VALO will, like all other curing lights, generate enough heat to make the patient aware of the heat of the soft tissues. If held on the soft tissue for an extended period of time, VALO (like all other curing lights) could cause damage to the soft tissues

Damage is a function of two things: Heat and Duration without relief.

- Brief exposure to higher temperatures is possible without damage. The body has cooling mechanisms: respiration and blood flow. Live dental pulp uses blood flow as a cooling mechanism.
- Some laser surgery studies have **suggested that irreversible tissue damage occurs at 69 ±6°C, irrespective of exposure time.**
 - *Reference: Nd:YAG surgical laser effects in canine prostate tissue: temperature and damage distribution van Nimwegen, Physics in Medicine and Biology, Volume 54, Issue 1, pp. 29-44 (2009)*

4. Why would I use the Plasma Emulation mode?

Plasma Emulation mode supports the higher intensity/shorter exposure time philosophy. For example, you might choose to cure a sealant on an uncooperative child as quickly as possible. With VALO, you can make the choice to cure in Plasma Emulation mode.

5. Why would I use the High Power mode?

High Power mode shortens curing time for composites and other products. Its power output shortens curing time from 10 seconds in Standard Mode to 4 seconds in High Power Mode, saving 6 seconds per cure.

6. How does your Plasma Emulation Mode compare to Plasma ARC lights?

Plasma Emulation Mode and plasma arc lights offer similar power output, allowing you to shorten the exposure time. They differ in that with VALO's Plasma Emulation Mode, you don't need to replace bulbs or take up valuable operatory space. Also, VALO costs significantly less than plasma arc lights.

7. What can I do to reduce exothermic heat to the tooth while using VALO's Plasma Emulation mode?

Notable clinicians who advocate using higher intensity lights have suggested that using a steady stream of air on the tooth while curing will counteract the heat.

8. You say the heat in Plasma Emulation mode does not adversely affect the tooth, but it does cause discomfort on my finger when I test it. Why?

You are feeling the heat on your soft tissues, which reacts differently than the tooth structure.

The finger has a "red" tone to it, which absorbs the energy therefore "feeling" the heat. The tooth color does not absorb the energy and therefore does not transfer the heat to the pulp. The white nature of the tooth means that much of the light is reflected and not turned into heat. Additionally, the blood flow in the tooth cools whatever heat is applied immediately.

9. How much more will my composite shrink because I use the PE mode?

Regardless of how a composite is cured, it will only shrink the amount it was designed to by the manufacturer.

10. How can I reduce the amount of stress affected by the **rate** of shrinkage when using the higher intensity modes?

There are a few accepted methods for reducing the stress from the composite being cured with high intensity lights.

1. Placing a maximum thickness of 2mm increments will eliminate as much stress as possible.
2. Wedging the increments to decrease the amount of tooth surfaces being cured at one time.
3. Allowing a second or two between cures to let the composite rest.

11. What is VALO's depth of cure in Plasma Emulation mode?

Regardless of the mode, the depth of cure is 2mm. Depth of cure is more dependent on the type of composite than the light. Because there are so many variables to consider, we report and recommend 2mm increments.

12. Is it possible to cure Sealants in three seconds with VALO?

Yes, VALO cures UltraSeal XT® plus in three seconds in Plasma Emulation Mode.