THE DENTAL ADVISOR™

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TRANSLATING THE SCIENCE

Does High-intensity LED Light Output Equate to High Heat?

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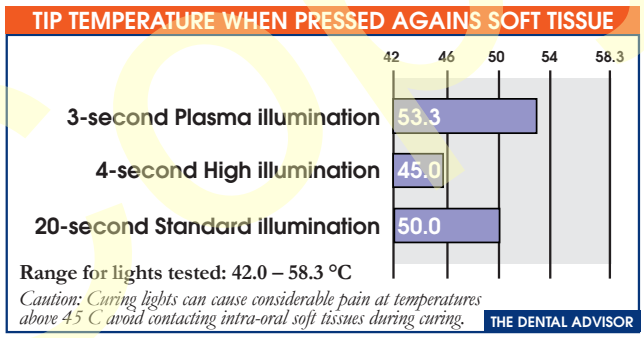
A recent survey of our clinical consultants of THE DENTAL ADVISOR showed they had concerns about using the newer high-intensity LED curing lights (ranging from 1200-5000 mW/cm²) instead of their trusted medium-intensity curing lights (ranging from 500-1200 mW/cm²). The top three concerns were:

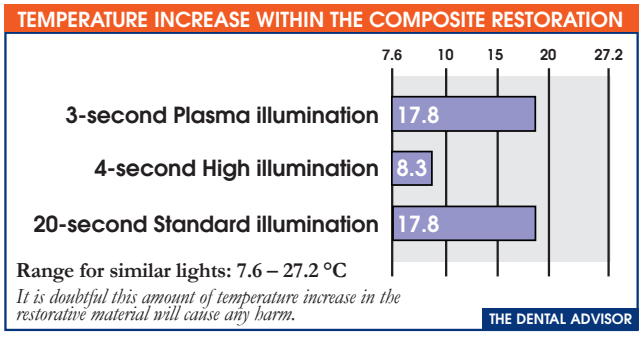
1. Can a patient's oral soft tissues be burned with the tip of the light?
2. Is there a risk of damaging the pulp with a high-intensity light?
3. How much does the temperature of the composite restoration increase during light curing?

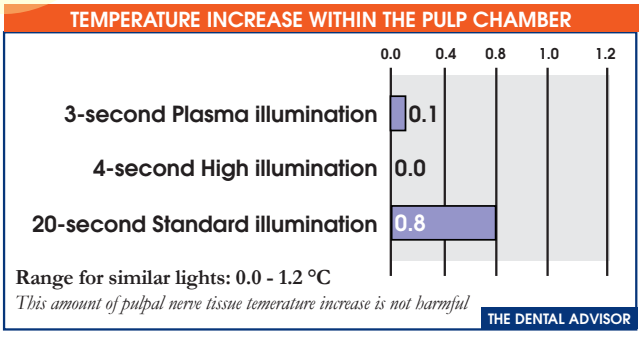
THE DENTAL ADVISOR Biomaterials Research Center investigated these concerns. An extracted adult human third molar was modified to hold a thermocouple approximately 1 mm below the surface of a Class II composite restoration and for a second test within the pulp cavity. Chicken muscle tissue was used to simulate the thermal absorbency and conductive characteristics of the oral soft tissues. Temperatures were measured over the time the curing light was on.

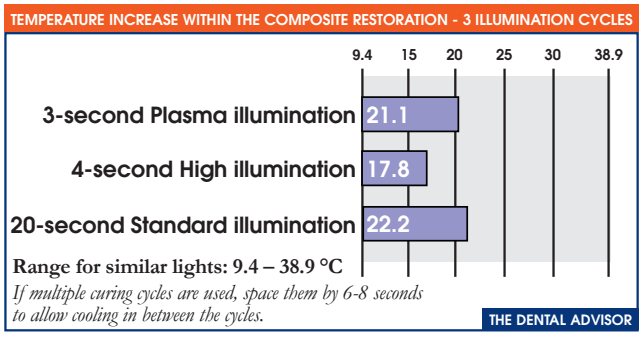
Test Results: Valo LED Curing Light

When used according to the manufacturer's instructions, the ***Valo LED*** (*Ultradent Products, Inc.*) curing light performed safely and reliably. The charts below show the range of results for several similar lights, and how the subject light compared.









Note: The intensity of the light is inversely proportional to the square of the distance between the point of measurement and the light-curing tip. In other words, intensity drops dramatically as you provide separation between the restorative surface or soft tissue and the light-curing tip. Experiment with the light against your finger or wrist and then at different distances to test the heat from the light.