

Prepare the pre-heated composite resin

Q Heating of composite resin prior to use has many benefits. How can I heat composite resin in my clinic?

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A Pre-heating of composite resin improves shear bond strength, microhardness value, and degree of conversion. When using composite resin in the clinic, pre-heating the composite resin could be recommended to enhance physical properties.

Another hypothesis for superior physical properties of pre-heated composite resin is that the reduced resin viscosity due to increased temperature might slightly enhance the photoinitiator efficiency, particularly in the case of the two-component camphoroquinone/tertiary amine initiator system.^{1,2} Thus, the enhanced mobility at higher temperatures of both monomer and polymer could produce a significant effect of delaying the vitrification. It is possible that enough camphoroquinone molecules might be converted to the excited triplet state in pre-heated composite to allow adequate propagation of the polymerization reaction for these materials.

Therefore, improved flowability of pre-heated microhybrid or packable resin may result in more accurate adaptation to the marginal area or sharp line angle of the cavity.^{3,4} As each increment of composite is placed and cured at its ideal polymerization temperature, curing at the elevated temperature might provide improved physical and mechanical properties.

The following methods can be used in your daily practice to pre-heat composite resin.

1. Calset composite warmer (AD Dent)

Calset composite warmer (AdDent, Inc., Dandury, CT, USA) is the most effective method to pre-heat composite resin. This device can heat material to 37°C, 54°C or 68°C and also maintain constant temperature.

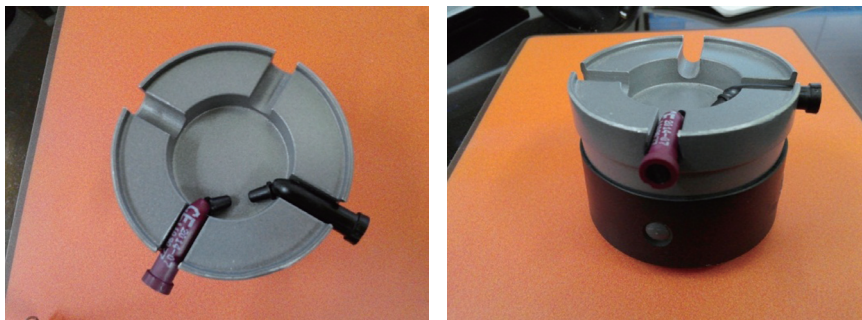


Figure 1. Calset system.

2. Light of dental unit chair

If you leave composite resin under the light of the unit chair, the temperature of composite resin will be raised. Consequently, microhardness and degree of conversion also increase with elevated temperature of composite resin.



Figure 2. Heating of composite resin under the operating light of unit chair.

3. Hand holding

If composite resin is wrapped by hand for 3 - 5 minutes, temperature of resin rise slightly.



Figure 3. Holding composite resin in one hand.

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References

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