



Harnessing heat using a mug warmer

There are many useful applications of heat in dentistry. This article illustrates how a simple and cheap setup that I have devised, using a mug warmer, can be used to harness heat energy and the rationale behind why heat can help maximise efficiency and efficacy in various dental procedures.

RECOMMENDED SETUP:

Component	£	Description
Fig. 1 	1.99	Coffee mug warmer: This is a cheap alternative to buying a dedicated heater used to warm composite and anaesthetic solution which can cost between £200-£300. The 'TRIXES USB Cup/Mug Warmer Heater Pad + 4 Port USB Hub1' can be purchased from 'Amazon'. Connect mug warmer to a computer USB port and allow to heat prior to use.
Fig. 2 	<1 p/cup (100 cups for £2.50)	Plastic white cup: Place the cup on top of the hot plate of the mug warmer, after which any item to be heated can be put inside the cup and warmed to the desired degree.

APPLICATIONS:

COMPOSITE:

Heating composite can increase its pliability and aid in better manipulation of material to surfaces. As a result the physical properties of the material are more favourable for restorations, without having an adverse effect on the chemical composition and therefore not compromising aesthetics or function.



Fig. 3 composite capsules

LOCAL ANAESTHETIC:

There are some studies to support that warming an anaesthetic cartridge prior to use, reduces pain on infiltration (Bainbridge LC, 1991). Ideally the cartridge should be warmed near to body temperature.



Fig. 4 anaesthetic cartridge

SODIUM HYPOCHLORITE:

The efficacy of sodium hypochlorite can be simply and practically enhanced by increasing its temperature. This improves its immediate tissue-dissolution capacity (Zehnder M, 2006). Some studies also support that heated sodium hypochlorite removes organic matter from dentine more efficiently than its unheated counterpart (Kamburis JJ et al, 2003).



Fig. 5 Sodium hypochlorite syringe

REFERENCES:

Fig. 1- http://www.amazon.co.uk/LUPO-USB-Warmer-Integral-Port/dp/B000Q4TO98/ref=sr_1_5?s=computers&ie=UTF8&qid=1417826322&sr=1-5&keywords=coffee+mug+warmer

Fig. 2- <http://www.fountaindrinks.co.uk/uploads/Image%20-%20White%20Plastic%20Squat%20Cup.jpg>

Fig. 3- http://www.net32.com/images/cosmetic-dentistry/pic_prod_3m_z100.jpg

Fig. 4- <https://www.dentalaegis.com/media/thumbnail/32176/255x255>

Fig. 5- <http://www.shippsdental.com/images/5182.jpg>

1. Bainbridge LC. Comparison of room temperature and body temperature local anaesthetic solutions. *British Journal of Plastic Surgery* 1991 Feb-Mar;44(2):147-8
2. Kamburis JJ, Barker TH, Barfield RD et al. Removal of organic debris from bovine dentine shavings. *J Endod* 2003 29: 559-561.
3. Zehnder M. Root canal irrigants. *J Endod* 2006 32: 389-398.