



British Institute
of Dental & Surgical
Technologists

CPD Article

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Proud of our History, Looking Forward to the Future

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1 hr 
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Kemdent Practice Safe Soak

Belinda Mayoh BSc and James Holder BSc from Associated Dental Products Ltd, Swindon, describe the ideal qualities for an impression material disinfectant



First the boring bit!

On page 42 of *The Department of Health's Decontamination Health Technical Memorandum 01-05: Decontamination in primary care dental practices* it clearly states that all impressions, prostheses and orthodontic appliances must be "decontaminated in a multi-step process to be conducted in accord with the device or material manufacturer's instructions. Immediately after removal from the mouth, any device should be rinsed under clean running water. This process should continue until the device is visibly clean. All devices should then receive disinfection according to the manufacturer's instructions. This will involve the use of specific cleaning materials noted in the CE-marking instructions. After disinfection, the device should again be thoroughly washed. This process should occur before and after any device is placed in a

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patient's mouth. If the device is to be returned to a supplier/laboratory or in some other fashion sent out of the practice, a label to indicate that a decontamination process has been used should be affixed to the package."

In reality this means that every time a Dentist takes a dental impression it must be thoroughly rinsed, disinfected and rinsed again before it is sent to you at the Laboratory. Likewise when you send the crown, bridge, denture or whatever other type of appliance you have manufactured within the Laboratory it must be similarly disinfected and rinsed by the Dentist before it is placed in the patient's mouth. If the appliance is then returned to the Laboratory, for whatever reason, the same cycle must be repeated both before sending it back and before reinserting it into the patient's mouth at the next appointment. This protocol must be repeated until the

patient leaves the Practice with the final restoration or appliance. In between times, you will similarly be rinsing and disinfecting the impression or device upon receipt within the Laboratory and before sending it back to the Practice. That's a lot of rinsing and disinfecting!

Unfortunately a lot of the impression materials currently in use, especially alginate and polyether impression materials, are very moisture sensitive and so can become swollen and distorted if they remain in contact with water for too long.

Similarly, some of the disinfectants currently in use are supplied in either a powder presentation, which needs to be thoroughly dissolved if it is to have the manufacturer's recommended concentration for effective disinfection, which may not always happen in reality, or alcohol sprays, where there is an obvious health risk associated

with a vaporised spray, may be even incorporating bacteria etc. Consequently a burst of pressure from a spray can expel potentially harmful bacteria into the Laboratory environment, which can then possibly settle upon the surrounding surfaces and later come into contact with staff, causing a serious risk of cross-contamination and infection.

The water that the impression is rinsed in must also be considered. If it is hard water, containing various calcium and magnesium impurities, these can be deposited on the surface of the impression acting as a barrier between the impression surface to be disinfected and the disinfecting agent itself. It is also well documented that these impurities reduce the effectiveness of some disinfecting chemicals, themselves, by forming chemical bonds and essentially deactivating them.

Therefore the ideal Impression Material Disinfectant should have the following properties:-

- Meet all the requirements of HMT 01-05 etc with regard to the disinfection of impression materials, prostheses and orthodontic appliances
- Safe to use – containing no allergenic or components hazardous to health
- Short working time – to avoid excessive water contact
- Easy to use
- Liquid rather than powder presentation – easy to mix in the correct proportions
- Effective in hard water
- Cost effective

There are now products on the market which, when used in the appropriate



concentration in an ultrasonic bath to maximise contact with the impression material's surface, require only 3 minutes immersion time. This is dramatically less than the 10 minutes recommended by the manufacturers of other products. This means that the risk of alginate and polyether impressions becoming distorted due to water absorption is minimised. It also saves time for Technicians, who are often in a hurry and do not want to waste time waiting around while an impression soaks for the right duration, often resulting in inadequate disinfection.

These new products frequently contain different active ingredients. For example, they may contain a blend of Benzalkonium Chloride, Didecylmethyl Ammonium Chloride and Borax. Benzalkonium Chloride is extensively used in First Aid Kits for the treatment of cuts, cold sores and blisters, but it has been tested and approved for use in the Food Industry¹, consequently it is safe for use within the Dental Industry too. Didecylmethyl Ammonium Chloride provides an additional bacteriostatic and bactericidal effect. Finally, Borax or Sodium Borate is a naturally occurring mineral compound which helps disinfect the impression surface due to the formation of Hydrogen Peroxide. It also acts as a natural water softener, acting against the calcium and magnesium impurities found within hard water, thereby

boosting the disinfecting efficiency of the Benzalkonium Chloride and Didecylmethyl Ammonium Chloride. The combination of all three makes the impression material disinfectant effective against bacteria (including MRSA) and fungi (including yeasts) and lipid enveloped viruses.

Frequently they are also manufactured without any of the degreasers or alcohols present in other materials.

Many of these products are supplied in a concentrated liquid presentation which is diluted in water to produce a working solution, which should be changed daily or when it has become visibly contaminated.

References

1. The Disinfectant Effects of Benzalkonium Chloride on Some Important Foodborne Pathogens. American-Eurasian J. Agric. & Environ. Sci., 12 (1): 23-29, 2012



For further information on PracticeSafe Soak please contact Kemdent on 01793 770090 or visit www.kemdent.co.uk

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Q1.)What 3 things should your Laboratory do with an impression before using it to cast a model?

Q2.)What is the health risk associated with using alcohol spray disinfectants?

Q3.)Name three of the properties of an ideal Impression Material Disinfectant?

Q4.)What is the shortest time recommended for immersion in an ultrasonic bath for the newer disinfectants available?

Q5.)Name the three things that Benzalkonium Chloride is often used to treat?

Q6.)What two benefits does Didecyldimethyl Ammonium Chloride offer?

Q7.)Which of the three ingredients mentioned in the article is especially beneficial in areas with hard water?

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