

## Test for discoloration of denture material in Medical-Interporous-TM solution

**Introduction:** Dentures occasionally display a severe, white discoloration of the denture material known among experts as bleaching, which can have various causes. A simple test according to ISO was carried out by storing polymer in water at 100°C for a certain period of time, however this never leads to such a discoloration as that occurring in practice. According to microscopic examinations the discoloration is caused by light scattering on an inhomogeneous structure, but why this inhomogeneous structure occurs is not entirely understood. A number of tests (Robinson et al) point to the influence of acetone, which is found on the breath of diabetics.

Polymers used for dentures consists of PMMA pearls in a matrix of cross-linked polymer. The pearls are not cross-linked, but mostly contain copolymers and softeners which are necessary during the processing to ensure the powder rises quickly. The various phases are normally blended closely and homogeneously, to ensure that the light scattering causing the above-mentioned discoloration does not occur. However it is conceivable that outside influences such as water, acetone or chemical changes mean this homogeneity cannot be guaranteed, and that bleaching occurs as a result. To further examine the effect of these influences in relation to Medical-Interporous, various denture materials were subjected to extreme test conditions.

**Method:** 3 samples, each of hot polymer, ProBase hot, cold polymerizate, ProBase cold and an injection material which is also hot polymerized, Iccap Plus, were stored at 50°C in a solution of Medical Interporous tablets dissolved in 50 ml of water. The solution was renewed every 2 weeks. Comparison samples were then stored at the same time in a dark and dry place. After 4 months storage at 50°C the samples were then rinsed with tap water, dried and compared with the samples which had been stored in the dark.

**Results:** No significant discoloration could be found on the denture materials tested. Only in the case of the cold polymers, a light yellow-brownish discoloration could be observed, however this is normal in the case of cold polymer and is not related to do with the bleaching tested here. Therefore it can be clearly stated that Medical-Interporous, when used in the normal conditions, has no influence on the colour of denture materials.

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