

Short-term chemical and physical changes in invisalign appliances.

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OBJECTIVE: To investigate the short-term optical, chemical and morphological changes in Invisalign appliances. **METHODS:** One 'as-received' Invisalign aligner, one 'as-received' Invisalign aligner immersed in artificial saliva for 14 days and 10 Invisalign aligners worn by 10 randomly selected patients for 14 days were used. Fourier transform infra-red microspectroscopy was used to characterise any molecular changes on the surfaces of the appliances, spectrophotometry was used to evaluate any changes in colour and transparency, scanning electron microscopy and energy dispersive X-ray microanalysis were used to examine the surface morphology and elemental composition of deposits on the surfaces of the aligners and gas chromatography-mass spectrometry was used to identify substances released from the aligners into the artificial saliva. **RESULTS:** Aligners worn for 14 days had microcracks, abraded and delaminated areas, localised calcified biofilm deposits and loss of transparency. Monomers and/or by-products were not released from the aligner suspended in artificial saliva for 14 days, which suggests that the material is chemically stable. **CONCLUSIONS:** Further studies are required to evaluate how intra-oral conditions may influence the optical properties and chemical stability of the aligners.