

THE EFFECT OF THERMOCYCLING ON THE FATIGUE BEHAVIOR OF DENTAL COMPOSITES

Contents

The effect of thermocycling on the fatigue behaviour of 2 microfilled composites; Silux Plus³ and Heliomolar² and 3 hybrid composites; P50², Clearfil Photo Posterior³ (both light-activated) and Clearfil Posterior³ (chemically-activated) was investigated using a ball mill. Ninety specimens (2 x 2 x 25mm) of each material were used. The specimens were divided into 3 groups of 30 and were stored for 24 h in water at 37°C (Group A), subjected to 10⁴ thermal cycle over 45 days (Group B) and stored in water at 37°C for 45 days (Group C). Ten specimens of each material were tested in a 0.5 litre capacity ceramic ball mill⁴ which was rotated at 100 rev/min. This procedure was repeated 3 times. The mill was charged with 470g steatite balls and 250ml distilled water. At 30 minute intervals the number of fractured specimens was noted. All fractured and intact specimens were returned to the ball mill and the process repeated up to 5 hours. The mean survival time (mins) for P50 were >300(A), 85(B) and 130(C); Silux >300(A), 76(B) and 110(C); Heliomolar >300(A), 240(B) and >300(A); Clearfil Photo >300(A), >300(B), >300(C) and Clearfil Posterior >300(A), 165(B) and 160(C). Group A is significantly different (P< .05) from Groups B and C for all materials except Clearfil Photo Posterior. However, significant differences (P<.05) between Group B and C was only observed in P50 and Silux. *The fatigue behaviour of P50 and Silux is affected by thermocycling.*

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The effect of thermocycling on the fatigue behaviour of 2 microfilled composites; Silux Plus¹ and Heliomolar² and 3 hybrid composites; P50³, Clearfil Photo Posterior³ (both light-activated) and Clearfil Posterior³ (chemically-activated) was investigated using a ball mill. Ninety specimens (2 x 2 x 25mm) of each material were used. The specimens were divided into 3 groups of 30 and were stored for 24 h in water at 37°C (Group A), subjected to 10⁴ thermal cycles over 45 days (Group B) and stored in water at 37°C for 45 days (Group C). Ten specimens of each material were tested in a 0.5 litre capacity ceramic ball mill⁴ which was rotated at 100 rev/min. This procedure was repeated 3 times. The mill was charged with 470g steatite balls and 250ml distilled water. At 30 minute intervals the number of fractured specimens was noted. All fractured and intact specimens were returned to the ball mill and the process repeated up to 5 hours. The mean survival time (mins) for P50 were >300(A), 85(B) and 130(C); Silux >300(A), 76(B) and 110(C); Heliomolar >300(A), 240(B) and >300(A); Clearfil Photo >300(A), >300(B), >300(C) and Clearfil Posterior >300(A), 165(B) and 160(C). Group A is significantly different (P<.05) from Groups B and C for all materials except Clearfil Photo Posterior. However, significant differences (P<.05) between Group B and C was only observed in P50 and Silux. *The fatigue behaviour of P50 and Silux is affected by thermocycling.*

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