

# EXT STUDY RESTORATION

Evaluation of mechanical and optical behavior of current esthetic dental restorative CAD/CAM composites

## BRILLIANT Crios

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### STUDY AIM

Comparison of wear behavior of different CAD/CAM blocs with variable compositions.

### EXPERIMENTAL SETUP

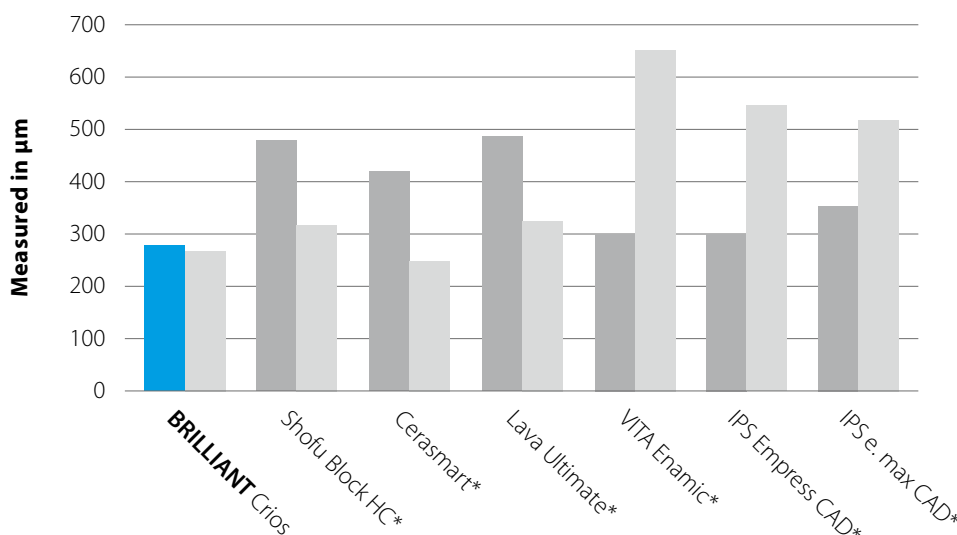
CAD/CAM materials were polished with ascending SiC papers up to P4000. Mesio-buccal cusps of maxillary human molars fixed in amalgam were used as antagonists. Specimens and antagonists were mounted in a computer supported chewing simulator. The specimens were loaded with a vertical load of 50 N and a sliding movement of 0.7 mm until 1,200,000 chewing cycles. Wear simulation with simultaneous thermal stress was applied in distilled water at changing temperatures of 5 °C and 55 °C with a duration of 60s for each cycle. All datasets before and after wear simulation were compared in 3D images.

Commercial available materials tested:

- Lava Ultimate\*, 3M Espe
- Cerasmart\*, GC
- Shofu Block HC\*, Shofu
- BRILLIANT Crios / Exp. CAD/CAM composite 2, Coltene
- Vita Enamic\*, VITA
- IPS Empress CAD\*, Ivoclar Vivadent
- IPS e.max CAD\*, Ivoclar Vivadent

### RESULT

The study showed the antagonist friendly behavior of CAD/CAM composites as ceramic based materials have significantly higher abrasion values. The wear on material of most CAD/CAM composites was higher in comparison to ceramics. Only BRILLIANT Crios showed comparable abrasion resistance to ceramics.



Two-body wear after 1,200,000 chewing cycles

- Wear material
- Wear antagonist