

## Grandio – Lustre after tooth brushing abrasion

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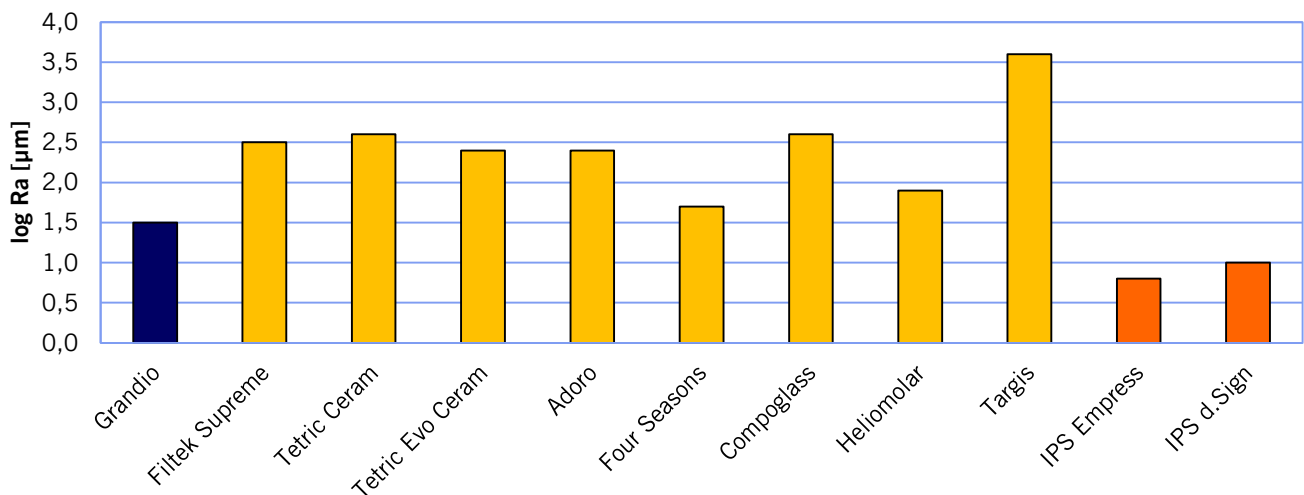
**Grandio is a composite material whose high resistance to abrasion has been proven in several studies. In these studies, the abrasion was determined according to the so-called ACTA method in most cases. To what extent tooth brushing abrasion, another form of abrasion, affects lustre and surface roughness was examined in a study at the University of Lausanne (Switzerland).<sup>[1]</sup>**

The so-called ACTA method is employed in most studies that examine the abrasion resistance of dental materials. This method simulates pressure abrasion, as it occurs on the occlusal surfaces with daily chew loading. This form of abrasion occurs less often in Class V restorations as well as vestibular and oral restorations. Abrasion from tooth brushing is primarily dominant here.

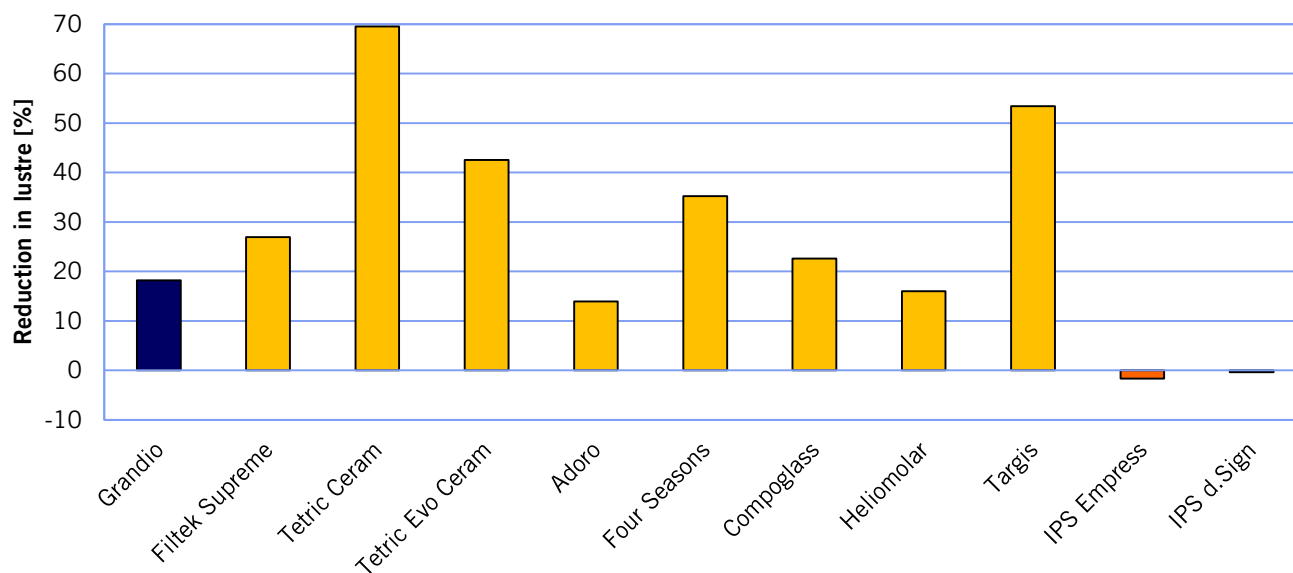
### Examination of lustre and surface roughness after tooth brushing abrasion

In the study presented here, the behaviour of 9 composite materials as well as two ceramics was examined. Test specimens were fabricated from the materials and mechanically polished (SiC, 4000 grit). These test specimens were mechanically brushed (10 h, 72,000 brushing cycles) with different pressure strengths (100 g, 250 g, 350 g) afterwards. Toothpaste with a RDA value of 75 was used here.

The surface roughness ( $R_a$ ) and lustre (% reflected light) were determined both before and after the brushing tests; the change was observed through the comparison of the two values. The summarised values for the three pressure strengths are shown in figures 1 and 2.



**Figure 1:** Surface roughness change log  $R_a$  [µm] after 72,000 brushing cycles



**Figure 2:** Reduction in lustre [%] after 72,000 brushing cycles

As anticipated, the values concerning the change in the roughness were the lowest for the ceramics. Grandio fared the best from the composites. A similar picture resulted with the change in lustre after the abrasion. Grandio also exhibited outstanding values here.

**Conclusion: Restorations with Grandio, the nano-hybrid composite, exhibit high resistance to tooth brushing abrasion. The surface thus remains smooth in the long term and does not lose its lustre.**

[1] S. D. Heintze, M. Forjanic, K. Ohmiti, V. Rousson, *Dent. Mater.* **2010**, *26*, 306-319.