Objective: To study the effect of two remineralizing agents on the microhardness and ultramorphology of demineralized enamel. Methods: Human maxillary anterior teeth were demineralized by phosphoric acid. Specimens were divided into two groups (G) according to the remineralizing agent tested: G1: Whitesmile mousse, G2: Clinpro™ White Varnish. The remineralizing agents were applied for three minutes per day for seven consecutive days. Microhardness and ultramorphological evaluation was tested for untreated enamel (control), demineralized enamel and remineralized enamel. Results: One-way ANOVA revealed statistical significant decrease on mean microhardness values after specimens' demineralization comparing to the control group. There was a significant increase on mean microhardness after the application of the remineralizing agents (p ≤0.05) compared to the demineralized specimens. There was an insignificant difference between mean microhardness for specimens treated with Whitesmile mousse and Clinpro™ White Varnish at p ≥0.05. SEM microphotographs of untreated enamel surface showed normal smooth enamel, while demineralized enamel showed a honeycomb like structure. Specimens treated with the remineralizing agents showed homogenous deposits filling the interprismatic spaces. Conclusion: Both remineralizing agents provided similar profit. However, Clinpro™ White varnish could be beneficial for patients who want to keep away from using fluoride or for children at danger of developing fluorosis.