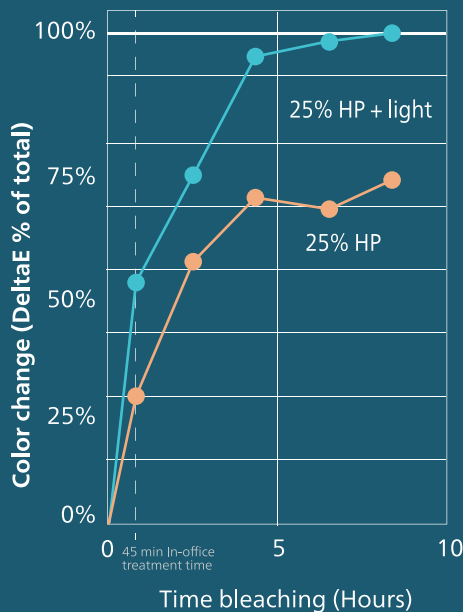


PHILIPS

ZOOM!

Insights into blue light accelerated teeth whitening



The impact of HP and Light

In an in-vitro study,¹ scientists found that even if a 25% HP whitening treatment was repeated for 8.75 hours, only 72% of stains were removed. After a while, HP would stop affecting any additional stains in teeth. However, when 25% HP was combined with high intensity blue light, it achieved 100% stain removal in the same amount of time.²

87%

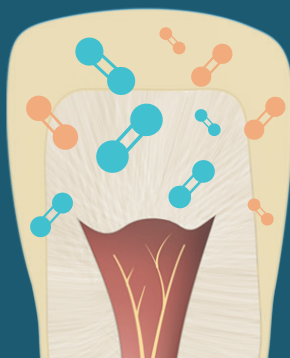
better stain removal results were achieved in **45 min** when using 25% HP Zoom! gel + the Zoom! WhiteSpeed lamp vs. using 25% HP Zoom! gel alone.



Stains that can be whitened with HP alone



Stains that can be whitened with combination of HP and Light



Different types of chromophores

The study showed that there are different types of stain components (chromophores). Some can be whitened with HP alone. Others can only be addressed by the combination of HP and high intensity blue light.

Conclusion

HP alone cannot target all staining components and needs a combination of HP and Zoom! lamp with high intensity and specific wavelength for better results.

1. Gottenbos B, de Witz C, Heintzmann S, Born M, Hötzel S. Insights into blue light accelerated tooth whitening. Heliyon. 2021

2. 45 mins+ treatment time was done for experiment purposes only and does not reflect in-chair treatment results

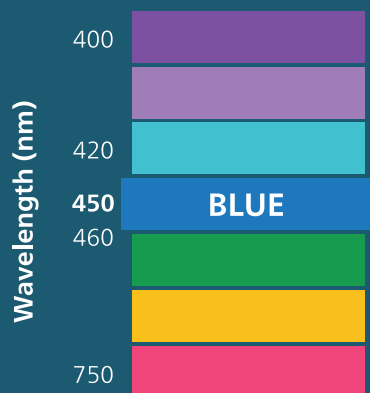


Light intensity impacts whitening results



The higher the intensity, the more whitening effect can be achieved. A significant shade improvement can be achieved already with intensity $>50\text{mW}/\text{cm}^2$. At $190\text{mW}/\text{cm}^2$ the color change approximately doubles.³

The color of light (wavelength) impacts whitening results



The amount of energy light has depends on the wavelength. Light acceleration effect lies between 420nm and 460nm and after that drops significantly.

Temperature doesn't affect whitening



Our study showed that temperature increase is not effective and can be dangerous for teeth if heated too much.³



Read the study

Conclusion

Zoom! Lamp treatment with high intensity of $190\text{ mW}/\text{cm}^2$ and wavelength between 420nm and 460nm is proven to be effective against teeth stains. The effect of temperature increase is not shown to accelerate stain removal.³

3. Based on a lab study, actual results may vary.