

Influence of Aelite Flo® shades and viscosities on illuminants - A, C, D65-sensitivity.

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INTRODUCTION: The colorimetric parameters of resin composites depend on the choice of illuminant¹. Tooth colorimetric parameters are influenced by illuminant with a ΔE^*_{ab} less than 1 between A and D65 illuminants². Aelite Flo® (Bisco) is a two viscosity (Flo-F, Flo Low-LV) flow resin composite available in two different shades (A2, A3.5). The aim of this study was to evaluate the influence of viscosity and shade on the colorimetric parameters with three illuminants.

METHODS: Ten 1mm-thick samples of each shade and each viscosity were placed between two glass slides and light-cured with Elipar Trilight® (3M/ESPE) in standard mode (850mW/cm²), according to manufacturer's instructions. The samples were stored at 37°C for 24 hours in darkness before colorimetric evaluation. Samples were placed on a white background and a central measurement was taken with a 45°/0° Color guide® (Byk Gardner) spectro colorimeter for three illuminants (A/2°, C/2°, D65/2°). Five colorimetric parameters were recorded -L*, a*, b*, C*(chroma) and h°(value). Delta E* values - ΔE^*_{ab} - (distance between two points in L*, a*, b* colorimetric space) between F and LV formulations were also calculated for the two shades for the three illuminants.

RESULTS: Statistically significant differences (Kruskall Wallis and Games-Howell, p<0.05) were found between the three illuminants (Table 1) for : (1) a* and for h°, (2) b* shades A2, A3.5 and A3.5 LV, (3) C*, except for A2 LV between A/2° and C/2°, (4) L* between illuminant A/2° and C/2° and, A/2° and D65/2°.

Table 1: L, a*, b*, C* and h° for 1 of the 2 shades and the two viscosities with the 3 illuminants.*

A2 A/2°	L*w	a*w	b*w	C*w	h*w
M	64,58 a	1,67 a	14,81 a	14,91 a	83,56 a
ET	0,40	0,09	0,08	0,07	0,36
A2 C/2°	L*w	a*w	b*w	C*w	h*w
M	63,76 b	-2,07 b	14,63 b	14,78 b	98,05 b
ET	0,29	0,13	0,09	0,11	0,43
A2 D65/2°	L*w	a*w	b*w	C*w	h*w
M	63,91 b	-1,63 c	14,45 c	14,54 c	96,43 c
ET	0,36	0,10	0,07	0,08	0,37
A2 LV A/2°	L*w	a*w	b*w	C*w	h*w
M	63,97 a	2,34 a	15,13 a	15,31 a	81,20 a
ET	0,51	0,18	0,08	0,09	0,67
A2 LV C/2°	L*w	a*w	b*w	C*w	h*w
M	63,29 b	-1,94 b	15,20 a	15,32 a	97,26 b
ET	0,36	0,18	0,14	0,16	0,61
A2 LV D65/2°	L*w	a*w	b*w	C*w	h*w
M	63,32 b	-1,43 c	15,07 a	15,14 b	95,40 c
ET	0,43	0,15	0,07	0,08	0,54

A statistically significant difference (Kruskall Wallis and Games-Howell, p<0.05) was found for each illuminant ΔE^*_{ab} comparison (A/C ; A/D65 ; C/D65) (Table 2):

*Table 2: ΔE^*_{ab} registered for each illuminant pair comparison .*

	A2	A2LV	A3.5	A3.5LV
M	3,85 a	4,34 a	5,67 a	4,96 a
ET	0,14	0,06	0,10	0,07
	A/D65			
M	3,41 b	3,83 b	4,98 b	4,35 b
ET	0,18	0,10	0,14	0,06
	C/D65			
M	0,63 c	0,58 c	0,87 c	0,72 c
ET	0,20	0,08	0,07	0,09

A statistically significant difference (Mann-Whitney, p<0,05) was found for ΔE^*_{ab} between the two viscosities of each shade for each illuminant comparison (A/C ; A/D65 ; C/D65), except for A2 between illuminant C/2 and D65 (Table 3):

*Table 3: ΔE^*_{ab} recorded for the 2 viscosities of the 2 shades.*

	A/C		A/D65		C/D65	
	M	ET	M	ET	M	ET
A2	3,85	0,14 a	3,41	0,18 a	0,63	0,20 a
A2LV	4,34	0,06 b	3,83	0,10 b	0,56	0,08 a
	A/C		A/D65		C/D65	
	M	ET	M	ET	M	ET
A3.5	5,67	0,10 a	4,98	0,14 a	0,87	0,07 a
A3.5LV	4,96	0,07 b	4,35	0,06 b	0,72	0,09 b

A statistically significant difference (Mann-Whitney, p<0,05) was found for ΔE^*_{ab} between the two shades of a same viscosity for each illuminant comparison (Table 4).

*Table 4: ΔE^*_{ab} registered for same viscosity of each shade*

	A/C		A/D65		C/D65	
	M	ET	M	ET	M	ET
A2	3,85	0,14 a	3,41	0,18 a	0,63	0,20 a
A3.5	5,67	0,10 b	4,98	0,14 b	0,87	0,07 b
	A/C		A/D65		C/D65	
	M	ET	M	ET	M	ET
A2LV	4,34	0,06 a	3,83	0,10 a	0,56	0,08 a
A3.5LV	4,96	0,07 b	4,35	0,06 b	0,72	0,09 b

DISCUSSION & CONCLUSIONS: The two shades' colorimetric parameters were influenced by either illuminant or viscosity. Illuminant sensitivity was greater for A3.5 than A2 shade. The illuminant was then able to significantly influence the color perception, sometimes perceptible by the patient- $\Delta E^*_{ab}>3.3-$, except for the comparison between C and D65 illuminants.

REFERENCES: ¹ Y.-K LEE, B.-S LIM, C.-W KIM (2004). *Influence of illuminating and viewing aperture size on the color of dental resin composites.* Dent. Mater. 20: 116-123. ² J.J TEN COOPS, J.C BOSCH (1995). *Tooth color and reflectance as related to light scattering and enamel hardness.* J. Dent. Res. 74 : 374-380.