LIGHT & HEAT RESISTANT COLORING WITH AUTOMOTIVE BLACK^{X}

Photofading is not only determined by the coloring solution being used, but also by the interaction between the color, the material of the 3D-printed part and the surface finish. This overview compares the light and heat resistance of printed and by DyeMansion finished parts colored in Black 01, X AM Black (1st generation) and X AM Black (2nd generation) respectively. Three most common materials (EOS PA2200, HP 3D HR PA12 and EOS PA1101) were used in these comparison tests.

LIGHT AND HEAT RESISTANCE

All tests were performed according to ISO 105-B06 with the following parameters:

INSULATED BLACK PANEL TEMPERATURE	100 °C
CHAMBER AIR TEMPERATURE	65 °C
RELATIVE HUMIDITY	30 %
IRRADIANCE (TUV SENSOR 300-400 NM)	60 W/m^2
CYCLE TIME	45 h
NUMBER OF CYCLES	3

The results of the lightfastness testing are shown in the following table:

MATERIAL	FINISH	GREY SCALE Black 01	X AM Black (1st)	X AM Black (2nd)
EOS PA2200	PSS	3 – 3.5	4.5 – 5	3.5 – 4
	VFS	-	-	4 – 4.5
HP 3D HR PA12	PSS	3 – 3.5	4.5 – 5	4
	VFS	-	-	4 – 4.5
EOS PA1101	PSS	3	4.5	3.5 - 4
	VFS	-	-	4 – 4.5

TEST PARTS

All test parts for the determination of light and heat resistant properties were printed in 45°-orientation and depowdered in the Powershot C with PC4 blasting media. An overview about the tested materials and applied colors and finishes can be seen in the table below:

MATERIAL	TECHNOLOGY	COLOR	FINISH
EOS PA2200	Selective Laser Sintering (SLS)	Black 01 vs. X AM Black	PolyShot Surfacing (PSS) VaporFuse Surfacing (VFS)
HP 3D HR PA12	Multi Jet Fusion (MJF)		
EOS PA1101	Selective Laser Sintering (SLS)		

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