

UV Resistance

The UV resistance of the Gentoo treatment was determined in accordance with ASTM D4329. During the testing, a UVB-313 lamp with 0.63W/m² irradiance was used. The QUV test cycle was comprised of a 7 hour period of UV exposure at 50°C followed by a 5 hour period at 50°C with a 100% relative humidity condensation cycle. The QUV test cycle was repeated for 4 weeks. Table 4 shows the results of the QUV testing. Visually, it is evident that QUV exposure did not have a significant effect on the properties of the Gentoo, as no evidence of degradation, delamination, discoloration, etc. was observed. In general, the contact angle of the coating decreased by 7% after 4 weeks QUV exposure. The transparency and clarity of the control and Gentoo treatment remained relatively constant throughout the test. Haze increased for all the coatings throughout the test, though the haze remained under 1.65%, which is well under the visual limit in which coatings no longer appear transparent.

Table 4 Effect of 4 weeks of QUV exposure on hydrophobicity and light transmission properties of Gentoo		
Test Method	0 Weeks	4 Weeks
Contact Angle (°)	112	104
Transparency (%)	92.5	91.7
Haze (%)	0.78	1.64
Clarity (%)	99.8	99.7

UV resistance of the Gentoo on a MIL-PRF-85285E Type I Class H white gloss urethane topcoat was evaluated using ASTM G-154 Cycle 2, in which a UVB-313 lamp with 0.71W/m² irradiance was used. The QUV test cycle was comprised of a 4 hour period of UV exposure at 60°C followed by a 4 hour period at 50°C with a 100% relative humidity condensation cycle. Following 500 hours of exposure, no significant change in CIE color properties were observed with the addition of Gentoo. The Gentoo exhibited less color change and significantly less gloss change than the MIL-PRF-85285E Type I Class H white gloss urethane topcoat coating over the performance period.

Table 5
Effect of 500 hours of QUV exposure color properties of the MIL-PRF-85285E Coating with Gentoo

Test Method	Control	Gentoo
QUV Exposure Time (hours)	500	500
ΔL^*	-0.6	-0.8
Δa^*	0.2	0.1
Δb^*	-1	-0.5
ΔE	1.2	0.9
Initial Gloss	91.6	88.7
Δ Gloss	-8.9	-1.1