

ASTM D522 Test Method B – Cylindrical Mandrel Test: WB HRZS[®] Primer and WB HRZS[®] Primer with Ply-Guard AS

Panels coated with WB HRZS[®] Primer and WB HRZS[®] Primer with Ply-Guard AS were tested according to ASTM D522 Test Method B – Cylindrical Mandrel Test. Twenty steel Q-panels were blasted to a SP-10 finish and, using Testex HT Coarse tape, were determined to have an average surface profile of 2.0 mil.

The WB HRZS[®] Primer was sprayed to an average dry film thickness (DFT) of 4.5 mil on all twenty panels. The coating was applied under the following average conditions, determined using a Defelsco Positector: %RH = 47.5%, T_a = 73.1°F, T_s = 75.6°F, T_d = 51.2°F, and Δ = 24.4°F, where %RH = percent relative humidity, T_a = air temperature, T_s = surface temperature, T_d = dew point, and Δ = surface minus dew point temperature.

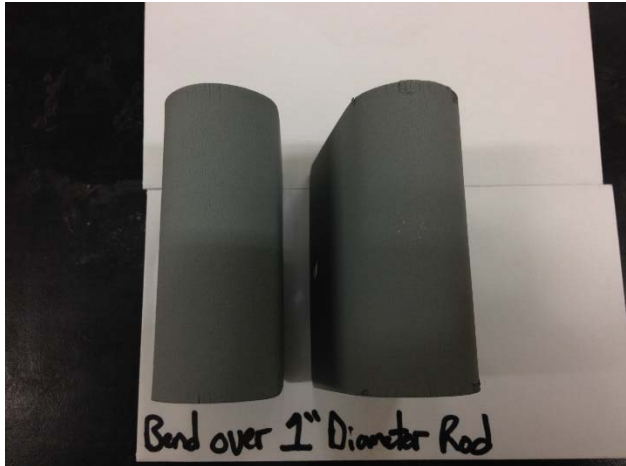
Ten of those panels were sprayed with a top coat of Ply-Guard AS for an average total DFT of 11.4 mil. The panels were sprayed using an Accuspray HVLP gun with air pressure at 25 psi. All of these panels were cured at room temperature and conditioned at 23 ± 2 °C at 50 ± 5% relative humidity for 24 hours before testing.

The panels were tested using a cylindrical mandrel test apparatus containing multiple mandrels. The following mandrels were used for this testing: 25 mm [1 in.], 19 mm [3/4 in.], 15.9 mm [5/8 in.], 12.7 mm [1/2 in.], and 9.5 mm [3/8 in.]. Two panels were bent over each mandrel. A “pass/fail” designation was given for each test panel based on whether cracking occurred. The results are below.

	WB HRZS [®] Primer		WB HRZS [®] Primer with Ply-Guard AS	
	Panel 1	Panel 2	Panel 1	Panel 2
Dry Film Thickness (DFT)	3-5 mil		6-8 mil	
25 mm (1 in)	Pass	Pass	Pass	Pass
19 mm (3/4 in)	Pass	Pass	Pass	Pass
15.9 mm (5/8 in)	Pass	Pass	Pass	Pass
12.7 mm (1/2 in)	Pass	Pass	Pass	Pass
9.5 mm (3/8 in)	Fail	Fail	Pass	Fail

The WB HRZS[®] Primer coated panels started to have visible stress in the middle of the panel when bent over the 15.9 mm (5/8 in) diameter mandrel. Cracking occurred when bent over the 9.5 mm (3/8 in) diameter mandrel. The WB HRZS[®] Primer with Ply-Guard AS panels had little change throughout the testing. When bent over the 9.5 mm (3/8 in) mandrel, a small crack was observed in one of the panels. The failure occurred when bent over the 9.5 mm (3/8 in) diameter mandrel for both of these coatings. All test results can be seen in the photos on the next page.

**WB HRZS[®] Primer on 0.8 mm (1/32 in) Thick Steel Panel After
ASTM D522 Test Method B – Cylindrical Mandrel Test**



WB HRZS[®] Primer with Ply-Guard AS on 0.8 mm (1/32 in) Thick Steel Panel After ASTM D522 Test Method B – Cylindrical Mandrel Test

