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To: Alisa R. Hoffee
 From: Candy Plisko

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Report: 2124 Pactiv Tuff Stuff

Request and Purpose for Analysis

Puncture Resistance evaluates the force required to penetrate aluminum side, and bubble side of the laminated product at slow impact.

Results and Data: Puncture Resistance : ASTM F1306 performed on Intron - 4465

Specimen Results: Aluminum side

3x12

Specimen	Displacement @ Max. Load (in)	Load at Max. Load (lbs)	Stress at Max. Load (psi)	Load/Thick @ Max Load (lbf/in)	Thickness (in)	% Strain @ Max. Load (%)
A	1.077	15.030	404.85	50.61	0.2970	67.31
B	0.765	11.870	319.73	39.97		47.98
C	1.113	16.350	440.40	55.05		69.61
Mean	0.985	14.417	388.33	48.54	0.2970	61.63
Std. Dev.	0.191	2.302	62.01	7.75	0.0	11.88

Specimen Results: Bubble side

3x12

Specimen	Displacement @ Max. Load (in)	Load at Max. Load (lbs)	Stress at Max. Load (psi)	Load/Thick @ Max Load (lbf/in)	Thickness (in)	% Strain @ Max. Load (%)
A	0.425	13.290	357.98	44.75	0.29700	26.60
B	0.451	14.090	379.53	47.44		28.19
C	0.477	14.170	381.68	47.71		29.81
Mean	0.451	13.850	373.06	46.63	0.29700	28.20
Std. Dev.	0.026	0.487	13.11	1.64	0.0	1.61