

Evaluating/Comparing mechanical properties of compostable films

Background: An evaluation and comparison of several compostable films is sought. Submitted films are Nat-Ur Bio film, BioTuf trash bags, Bio Bag, Mater-Bi, BioCorp, Eco Film and EcoWorks.

Purpose: Evaluate the mechanical properties of submitted films.

Method: Breaking Factor, ASTM D 882, (lbf/in)
 Tensile Strength at Break, ASTM D 882, (psi)
 % Elongation at Break, ASTM D 882A, (%)
 Tensile Strength at Peak, ASTM D 882, (psi)
 Tear Test, ASTM D 1922, (Gf)
 Puncture Resistance, ASTM D 3420, (J)

Materials: Nat-ur Bio film, 0.75 mil
 BioTuf trash bags, 1.0 mil
 BioBag, 0.75 mil
 Mater-Bi, 1.0 mil
 BioCorp, 1.0 mil
 EcoWorks 5, 0.75 mil
 EcoWorks 10, 0.75 mil
 Eco Film, 1.0 mil

Procedure: The above tests were performed according to standard procedures for each.

Results:

Mechanical Properties

Material	Breaking Factor (lbf/in)	Tensile Strength at Break, ASTM D 882, (psi)	% Elongation at Break, ASTM D-882A, (%)	Tensile Strength at Peak, ASTM D 882, (psi)	Puncture Resistance, ASTM D 3420, (J)
Nat-ur Bio film, 0.75 mil	2.03/3.83	2822.1/5464.5	272.5/48.7	2898.3/5464.5	0.38
BioBag, 0.75 mil	2.99/3.14	3670.6/4293.6	242/122.7	3990.4/4293.6	0.52
EcoWorks 5, 0.75 mil	1.59/3.61	2315.3/6163.9	250.2/87.7	2465.68/6163.9	0.42
EcoWorks 10, 0.75 mil	3.36/5.02	4472.3/7459.9	334.5/108.7	4472.34/7459.9	0.68
Eco Film, 0.75 mil	3.99/4.4	6198.4/6213.81	393.3/220.5	6198.4/6835	0.62

Machine Direction/Cross Direction



Mechanical Properties

Material	Breaking Factor (lbf/in)	Tensile Strength at Break, ASTM D 882, (psi)	% Elongation at Break, ASTM D-882A, (%)	Tensile Strength at Peak, ASTM D 882, (psi)	Puncture Resistance, ASTM D 3420, (J)
BioTuf trash bags, 1.0 mil	3.04/4.3	3262.9/ 4376.58	309/135.6	3262.9/4713.1	0.30
Mater-Bi, 1.0 mil	2.01/2.69	1318.7/ 2748.2	131.3/94.9	2054.6/2884.6	0.18
BioCorp, 1.0 mil	2.19/3.5	1955.6/ 3054.9	294.6/249.1	2198.9/3610.1	0.96
Eco Film, 1.0 mil	6.76/6.26	7577.01/6744.1	254.4/438	8141.83/6848.4	1.55

Machine Direction/Cross Direction

Conclusion: According to Mechanical property testing results,

- (1) EcoWorks 10 offers the strongest film in every category for a 0.75 mil film.
- (2) EcoFilm offers the strongest film in every category for a 1.0 mil film.

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