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

Machine Direction/Cross Direction





## Mechanical Properties

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

**Project #:** 06-006-1125