

MECHANICAL PROPERTIES OF CORN GLUTEN MEAL / POLYVINYL ALCOHOL BLENDS PLASTICIZED WITH GLYCEROL

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Blends of corn gluten meal (CGM) and polyvinyl alcohol (PVAI) (87% hydrolyzed), in different proportion of CGM/PVAI (100/0, 75/25, 50/50 25/75 and 0/100 in weight, containing 20 wt% glycerol) were prepared by melting in a Haake torque rheometer at 160°C, 50 rpm for 6 min. The mixtures obtained were molded by heat compression and than characterized by tensile test. The table 1 shows the mechanical properties: Young's Modulus (E), elongation at break(ϵ), ultimate tensile strength (σ_r) for CGM/PVA blends. The σ_r and ϵ values increased with PVA content, whereas E decreased. The 50/50 CGM/PVA blend when compared to gluten pure showed a decrease of 61% in E and an increase of 60% and 900% in σ_r and ϵ , respectively. PVA is a flexible material and its presence favors the elasticity of these blends.

Table 1 – Young's Modulus (E), elongation at break(ϵ), ultimate tensile strength (σ_r) for CGM/PVA blends.

CGM/PVA	E(MPa)	σ_r (MPa)	ϵ (%)
100/0	256,5 ± 13,0	3,1 ± 0,2	1,1 ± 0,1
25/75	162,5 ± 3,2	2,6 ± 0,3	21,5 ± 0,2
50/50	99,0 ± 4,9	3,8 ± 0,2	34,5 ± 10,0
75/25	67,2 ± 1,0	8,1 ± 1,1	131,7 ± 18,1
0/100	65,8 ± 1,1	9,4 ± 1,4	157,9 ± 20,2

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