CHAPTER V
CONCLUSIONS

Cellulose pulp reinforced natural rubber/native tapioca starch composite foams and cellulose pulp reinforced natural rubber/octyl tapioca starch composite foams with varying natural rubber content and cellulose pulp content as a reinforcing filler were successfully prepared. An increase in the storage relative humidity level resulted in an increase in the moisture content of the all prepared foam products. Generally, natural rubber is inherently hydrophobic and its addition to the starch matrix clearly lowers the equilibrium moisture content of the prepared foam products. The optimal storage relative humidity which resulted in the maximum values of the specific flexural strength and the maximum flexural strain; for native tapioca starch composite foams were observed at 43.2 and 32.8 %RH respectively, for octyl tapioca starch composite foams were observed at 32.8 %RH. The advantages of the incorporated natural rubber were to improve the flexibility and reduce the effect that relative humidity has on the flexural properties of starch composite foams. Since, the incorporated natural rubber was reduced the specific flexural strength and specific flexural modulus, the cellulose pulp was selected as a reinforcing filler. The reinforcing effect of the cellulose pulp was found to increase with increasing cellulose pulp content, with native tapioca starch providing more improvement in the specific flexural strength and specific flexural modulus than octyl tapioca starch did. Lastly, the enzymatic degradability of both pure starch foam and cellulose pulp reinforced natural rubber/tapioca starch composite foams by α-amylase was found to increase with increasing reaction time and addition of cellulose pulp and natural rubber resulted in the composite foams being less subservient to enzymatic degradation by α-amylase than pure starch foams, especially for 'long' reaction times.