

## **ABSTRACT**

*Many research have been done and get excellent results with the use of natural waste, mainly utilizing natural fibers that are the result of natural waste, such as corn stalks, and others. This was mostly done because it is lightweight, easily molded, corrosion resistance, low prices and have similar strength to the metal. The purpose of this thesis is the use of corn stalk fiber and natural matrices composite material as a filler for puzzles that are environmentally friendly products.*

*Material manufacture products using machine felts heat (hot press) by varying the composition of the corn stalk fiber, tapioca starch and water. Looking for the composition, pressure and temperature are right on the felt hot (hot press) are also at issue in this thesis. Having obtained the exact composition, the product material is then applied to the shape puzzle using a laser cutting machine as a tool for machining. Machining process carried out in two stages, engraving and cutting.*

*With the composition of the corn stalk fiber : starch : water each 2 : 1 : 2 with the pressure ( $P_1 = 50$  bar,  $P_2 = 100$  bar), temperature of  $150^\circ\text{C}$ , boiling 20 minutes long and the emphasis is 10 minutes, the product material obtained dense and the thickness of the flat.*

*Keywords : corn stalks fiber, natural composite, hot press process.*