This experiment deals with similar joining of polypropylene (PP) with thickness of 3 mm was carried out by using friction stir welding (FSW) technique. The process parameters, rotational speed, welding speed and tilt angle were fixed of experiments. The tool geometry shapes were the main parameters which were taken into consideration. The optimum designs of tool geometry shape were determined with reference to tensile strength of the joint. During the tensile testing experiment, the results show that all fractured occurs in the heat-affected zone (HAZ) on the polypropylene (PP). Results show that the optimum design can be obtained with same rotational speed, welding speed and tilt angle.