Production planning is a tactical planning in order to give decision based on a company resource in fulfill demand of product. Determination of total optimal product that will be produced becomes a key for the right production planning. This is also having an affect on level of success in product supply chain in fulfill the consumer demand.

PT TJAKRINDO MAS at PVC division often focus on production planning for PVC Supralon pipe product type C 5/8” with 4 meters length. These occur because that product continuously producted every production period and have the highest sales average. But, demand level of product often not definitely. Therefore, production planning for PVC supralon pipe product type C 5/8” with uncertainty demand can be solved using Stochastic Programming. Mathematical model for this problem is formulated to be two stage Stochastic Linear Programming model by considering the existence of a demand scenario. Objective function of this model is subject to minimize the production cost and the penalty cost expectation, that is the stock cost and the shortage cost per product unit, which should be spent by the company for each production period. The constraint that is used in this model is a constraint of production capacity, inventory level, and storage capacity. The obtained result of production planning for this four planning period is get the value of objective function for model with three demand
scenarios, that is $Z = 291721700$, while the value of objective function for model with five demand scenarios is $Z = 337962000$.

Keywords: production planning, uncertainty demand, stochastic programming