



## CHAPTER V

### CONCLUSION

From the basic process and condition in preparing the EVA foam, many conclusions can be drawn as follows:

-Polymer and all ingredients, except the blowing agent (AK#2) and the crosslinking agent (DCP) must be premixed until the formulation reached perfect uniformity. The mixing interval in the internal (Changthong Mixer) was approximately 25 - 30 minutes.

-The time required to mix blowing and crosslinking agent uniformly in the internal mixer was approximately 5 minutes. However, the temperature must be controlled not to exceed 110°C to prevent possible decomposition of blowing agent and cross-linking agent.

-Two roll mills in this case served as a sheeting machine to make smooth sheets and also reduce the temperature of the compound while it didn't have any effect on foaming and cross-linking. The appropriate time used in this machine was about 5 minutes.

-The storage period after sheeting had much effect on the foaming. The compound must be stored at room temperature approximately 1-3 hours to produce

constant foaming. On the other hand, this period didn't affect the cross-linking.

-The proper time and temperature in the cross-linking/foaming process were the one that the decomposition of blowing agent and cross-linking agent efficiently reached 90 percent and corresponded with each other. The suitable cure time was 13 - 20 minutes at cure temperature 165°C.

-Various physical properties of the foam can be adjusted by varying the amount of blowing agent and cross-linking agent properly. However, zinc oxide about 0.4 part per hundred rubber of blowing agent must be mixed as the nucleating agent to reach better physical properties and solve the color and odor problem of the foam.

-In substituting synthetic polyisoprene with natural rubber in the EVA foam production, the foams produced from both natural rubber compound and synthetic rubber compound possessed almost identical physical properties except the more yellowish color of the natural rubber formulation. After all the above process conditions were controlled, the idea of substituting synthetic polyisoprene with natural rubber in the EVA foam production seemed primarily practical in the industry.