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# DEGRADATION AND STABILIZATION OF PVC SYSTEMS

 $\mathbf{BY}$ 

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### **ABSTRACT**

PVC, the most predominant member of the large family of vinyl polymers is among the most versatile and widely used thermoplastics. The unique combination of properties of PVC has been responsible for tremendous potential it possesses both for industrial as well as for domestic applications.

In this research study an effort was made to understand the behaviour of PVC when exposed to weathering characteristics. Theory of degradation and characteristics of stabilizer mechanisms and systems were studied before undertaking the research work.

Research work was carried out on an industrial scale in a PVC leather cloth manufacturing plant, to replace a Pb stabilizer system in the skin white formulation. Pb stabilizer system was replaced for two reasons.

- (1) Yellowing of the material when exposed to environment. Pb stabilizers are prone to sulfide staining. PbS is black in colour and as a result, Pb stabilized systems prone to discolour.
- (2) The greatest deterrent to the use of Pb stabilizer is their toxicity. There is no doubt that Pb stabilizers are toxic and as a result the use of these stabilizers have been restricted in many applications in many countries.

Sn stabilizer system which does not discolour and is non toxic, was introduced to the formula to replace the existing Pb stabilizer system. Several process changes had to be made to incorporate the new stabilizer system to overcome the processing problems associated with the use of Sn stabilizers.

This new stabilizer system intoduced and the new formula developed is currently being used successfully to produce white colour PVC leather cloth in this factory for commercial purposes.

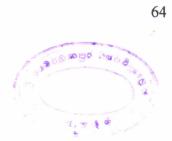
This new formula developed by introducing a Sn stabilizer is environmentally friendly and has a significant advantage over Pb stabilized systems in reducing harmful, hazardous and toxic effects.

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