

**THE INFLUENCE OF INTERFACIAL AGENTS ON THE IMPACT STRENGTH OF POLY (VINYL CHLORIDE)  
AND SOFT FILLER COMPOSITES**

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**Abstract**

The impact strength of rigid poly (vinyl chloride) (PVC) filled with scrap dust obtained from the buffing process in sports shoe sole manufacture has been investigated. Dust from outsoles and midsoles which had been treated with silane and zirconate coupling agents were mixed into PVC at various levels of coupling agent addition. The effects of polymeric interfacial agents (compatibilisers) were studied for 15 different agents by preparing them as masterbatches with the soft fillers, then mixing them into the PVC at various levels of filler loading and compatibiliser level. The zirconate coupling agent performed better than the achieved by using compatibilisers. Three good compatibilisers were identified for midsole filled PVC and one for outsole filled PVC. The impact strength was dependent on the compatibiliser type and level, and on the filler type and loading. The good compatibilisers improved the dispersion level of the soft fillers in the PVC and gave high impact strength with no reduction in heat distortion temperature and only a slight drop in hardness. The tensile properties changed to give lower ultimate stress and higher elongation at break. The results show that the addition of 2% of a good compatibiliser can double the Charpy notched impact strength of soft filled PVC, and give super or performance at lower cost than a 5% loading of a commercial ABS impact modifier.