EBM IRRADIATION MODIFICATION OF PALM OIL BIOMASS FILLED RECLAIMED RUBBER – MECHANICAL STUDY

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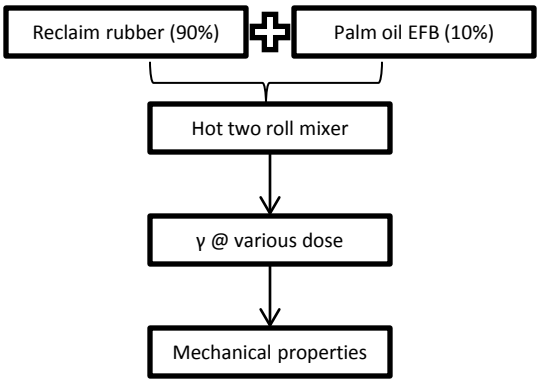
INTRODUCTION

Nowadays used tire has become one of the largest scale rubber wastes. With the fast development of the auto industry, the production of waste rubbers is also growing rapidly. Just like waste plastic, waste rubber also is becoming a worldwide problem. The disposal/utilisation of tyres, whose life span has ended, is a great economic and ecological problem. Meanwhile the authorities prohibit the open burning of this waste because of the release of zinc compounds into the atmosphere. Recycle of the waste rubber is thus a great challenge for both environmental and economic reasons. The rubber part can be ground to small particles, known as ground rubber tire (GRT), and can further be devulcanized to become reclaimed tire rubber (RTR) which is in powder form (Punnarak et al., 2006).

The earlier approach to this problem was to reclaim or remove the cross-links in the rubber rejects and then use the latter as new rubber. However, the quality of the rubbers, especially the GTR, reclaimed from these methods is not good enough to be widely used in rubber products. The scrap tire is of low quality because of the various aging effects during long-time use. What is more important is that hardly could these methods selectively break the crosslinks without destroying the main chain during the reclaiming process (Shi et al., 2012). Using reclaim tire rubber, having a non-cross-linked rubber structure, with addition of suitable filler should be a more effective choice to impart elastic property to the thermoplastics. In this study, reclaimed tire rubber is blended with palm oil empty fruit bunch (EFB) at certain ratio with the purpose to increase the properties of the rubber material.

MATERIALS AND METHODS



RESULTS AND DISCUSSION

Figure : Tensile test for reclaimed rubber filled EFB fibre at different sizes

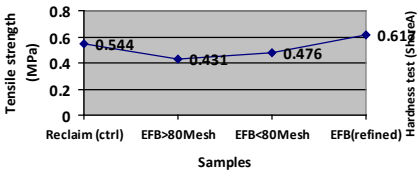


Figure : Hardness test for reclaimed rubber filled EFB fibre at different sizes

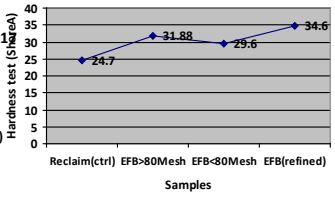
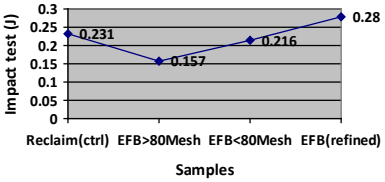


Figure : Impact test for reclaimed rubber filled EFB fibre at different sizes



CONCLUSION

- It can be concluded that with reducing the size of added filler will produce higher mechanical properties of reclaim rubber.
- Optimum mechanical properties of reclaimed rubber could be obtained at refined sized of EFB fiber.

NEXT STUDY

- Effect of EBM irradiation on the properties of blended rubber.
- Effect of acrylate monomers on the properties of EFB filled reclaim rubber – HDDA, n-BA and HVA-2.

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