

CHAPTER FIVE



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CONCLUSION

5.1 FINAL CONCLUSION

Chlorination has been considered as a good answer to the protein allergy problem. Its ability to reduce the surface friction, remove the non rubber substances and protein are the main advantages. This research shows that according to the level of chlorination there can be complex results with regard to tensile strength, friction coefficient and surface topology. Hence careful consideration should be given to select the optimum chlorination level.

According to Fig. 4.1 and Fig. 4.13 optimum tensile strength and friction coefficient are given at 1150 ppm chlorine concentration at 12 minutes chlorination time. Optical microscopic pictures prove that there are no surface cracks visible on the surface. Extractable protein content is also quite low at this point. However an efficient leaching system should be adopted to further reduce extractable protein content. Hence chlorination at 1150 ppm for 12 minutes can be taken as the optimum chlorination level.

The industrialists prefer the chlorination at 1150 ppm for 4-8 minutes. By analyzing Fig. 4.1 & Fig. 4.13 it can be identified that it is a good chlorination level, but optimum value is the suggested chlorination level since higher chlorine concentrations can cause surface cracks with poor ageing properties.

It can be assumed that the acidified medium has helped the cyclization reaction which distributed the stereo regularity during the initial substitution reaction. This can be avoided to a certain extent by using chlorine gas system instead of acidified Sodium Hypochlorite. Further, chlorine gas system prevents the chlorohydrine formation which reduces the thermal stability of the product.

5.2 FUTURE RECOMMENDATIONS

The chemical reactions which occur during the chlorination can be found out by FTIR Spectrometer. This can confirm the proposed mechanism which was brought forward by this research. It can be used to eliminate the chlorohydrin reaction which reduces

the thermal stability of the product.

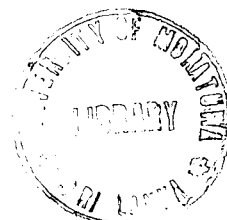
Poor ageing is a big problem with the chlorination products. This research can be focused to find the optimum age resistance and its relevant chlorination level.

The temperature of chlorination can have an effect on the reaction rate. The present research was done at room temperature. Hence this can be expanded by varying the chlorination temperature to obtain a further optimum point.

The amount of sulphur used has a direct effect on the chlorination reaction rate. The present research can be broaden by changing the amount of sulphur in the prevulcanised latex.



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ANNEXURES

Annex 1

Dry Rubber Content – 60%
Total Solid Content – 61.5%
Volatile Fatty Acid Number – 0.03
Alkalinity – 0.20
Mechanical Stability Time – 980 seconds
Magnesium Content – 100ppm

Annex 11

Dry Rubber Content – 60.43%
Total Solid Content – 61.81%
Volatile Fatty Acid Number – 0.03
Alkalinity – 0.19
Mechanical Stability Time = 1005 seconds



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