

# **EFFECT OF COMPOUND MATURATION ON GLOVE FILM PROPERTIES OF NITRILE LATEX**

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by  
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## ABSTRACT

Natural Rubber Latex (NRL) is one of the most important polymer material which is used in latex industry, especially in gloves and balloon industry like dipping industries. However, as production of NRL is less, most of the countries use synthetic rubber latex at present. In this context, most of the dipped products companies use Nitrile Butadine Rubber (NBR) latex which has similar chemical and physical characteristics to NRL for the production of gloves.

Generally, NBR latex is matured for 12 hours (maturity time) before using it for producing disposable gloves. However, all required properties of gloves have not been achieved at this maturity level. Therefore, this study was done to identify the changes of physio mechanical properties of the NBR latex at different maturation times. The experiment was done at different maturity levels such as 8 hrs, 12 hrs, 16 hrs, 20 hrs and 24 hrs for four different glove film thicknesses viz, 3 Mill, 4 Mill, 6 Mill and 8 Mill separately. Each experiment was replicated four times and they were arranged in CRD. The pH value, TSC, temperature and maturity level were maintained at the given range of company standards throughout the experiment. Then the changes of physio mechanical properties such as tensile strength, 100% modulus, force at break and swelling index were assessed using standard procedures.

The results indicated that, all tested properties were significantly different at different maturation levels. Further, the optimum swelling index range was in between 45% to 55% and maximum tensile strength value was  $28 \text{ N/mm}^2$ . The lower disposable glove thicknesses (3 Mill and 4 Mill) show the optimum physio mechanical properties at 12 hrs and 16 hrs maturation levels. The higher disposable glove thicknesses (6 Mill and 8 Mill) show the optimum physio mechanical properties at 20 hrs and 24 hrs maturation levels.

**Keywords:** glove film thickness, maturation time, NBR latex, physio mechanical properties