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## Dynamic Analysis of Dry Relaxation Shrinkage for Bordeaux Fiber

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**Abstract:** The knitted fabric suffers a deformation in its dimensions due to stretching and tension factors, transverse and longitudinal respectively, during the process in rectilinear knitting machines. For this reason a dry relaxation shrinkage procedure and prefixed thermal action are performed to obtain stable conditions in the knitting process. This paper presents a dynamic model to understand, explain and learn behavioral characteristics of the dry relaxation shrinkage for Bordeaux fiber. Six operational alternatives of shrinkage were simulated with their moments of repose. A balance loop is used to simulate and control the knitting dimensions and feeds each operating alternative. The presence of delays in the measurement and the corresponding adjustment are included. The model was validated through a sensitivity analysis. The results allow for identification of the best alternative operation, obtaining an estimate percentage of shrinkage for any size and model of the Bordeaux fiber. Implementation was made in a knitting company of Southern Guanajuato.

*Keywords:* System Dynamics, Dry Relaxation, Knitting, Dynamic Control