

**RUBBEIZED STEEL BELT GAUGE IMPROVEMENT  
AND ELIMINATION OF STEEL VISIBILITY OF COLD  
FEED EXTRUDER**

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By

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## ABSTRACT

PCR tyres specially used in High-speed, medium load car, van and light trucks which mainly consist of tread, inner liner, steel belts and fabric plies. Among those, the steel belt is a critical layer of the tyre and is designed to offer good strength, wear resistant, handling, fuel economy and prevent the penetration of spikes and ensuring excellent adhesion to the tread and body plies. There are many factors effecting to the rubberize gauge reduction of steel belts. In this research, machinery parameters and compound parameters which affect the steel belt gauge reduction was focused to find out the effects of this parameters and to identify the optimum parameter combination an improving the steel belt gauge.

Head pressure (10 to15 Kpa), Head temperature (85 to 95 °C), Line speed of the extruder (9mpm to 10mpm), plastic, screw and extruder temperatures on the cold feed extruder were tested. Furthermore, Moony viscosity properties of the belt rubberized compound were analyzed using Minitab-16 statistical software as well as uniform and sufficient die clearance was obtained by correction of the die.

It was found that there is an effect of the head pressure, head temperature and line speed on the steel belt gauge reduction. The best results were obtained by the extruder operated under optimum parameter combination by the results of the design of experiment (DOE) response optimization analysis. The optimum steel belt adhesion properties were obtained by improving inter belt rubberized steel belt gauge.