

**IMPROVE ABRASION RESISTANCE OF
NATURAL RUBBER COATED GLOVE IN
RELATION TO EN388:2016**

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By
**SENARATH HETTI ARACHCHIGE DHAMMIKA
PRASAD WIJAYASIRI**

**Palm & Latex Technology and Value Addition Degree
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Faculty of Animal Science and Export Agriculture
Uva Wellassa University of Sri Lanka
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ABSTRACT

Physical properties and performances are very important factors for natural rubber coated gloves as glove themselves should not cause any harm at the end use. Most of them are designed to fulfill different purposes like chemical resistance, heat resistance and mechanical hazard resistance. EN 388:2016 is one of the European Standards which is applicable for the protective gloves against mechanical risks. Under EN 388:2016, mainly the glove performance like abrasion, cut, tear and punch resistivity are tested. Ratings are given according to performance test results and the glove marking which indicates the test results will be paste on the glove surface.

Abrasion resistance of the polymer coating of a natural rubber coated glove may depend on many factors like bonding strength between yarn and the polymer coating, crack growth of polymer coating and bonding properties of polymer. Fumed silica and precipitated silica were used as a compound modification by replacing the traditionally used non-reinforcing filler CaCO_3 . Silane coupling agents were used as surface modifiers to increase the surface activity and the bonding ability. Three separate experiments were conducted as developing silica dispersion, replacing the filler and optimizing the filler loading. "Surfynol" was identified as the best surfactant to prepare silica dispersions as it acts as a good wetting and dispersing agent. For both precipitated and fumed silica, loading levels varying from 20phr (Parts per hundred of rubber) to 5phr were tested for the abrasion resistance. At the loading level of 7phr, the maximum performances against abrasion resistance was observed while fumed silica filled samples showing better abrasion resistivity compare to the precipitated silica filled samples.

Key words: Precipitated silica, Fumed silica, Silane coupling agents, natural rubber coated glove, abrasion resistance.