

<b>TITLE</b>	DEVELOPMENT OF OIL-RESISTANT NATURAL RUBBER SURFACE
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<b>ABSTRACT</b>	<p>Normally, natural rubber (NR) exhibits poor oil-resistance. Improvement of oil resistant properties of NR was studied by surface modification of unfilled and carbon black (CB) filled NR vulcanisates. Modifications of the NR surface to increase its polarity were made by epoxidation, oxygen plasma treatment and argon plasma treatment. The results showed that all the surface modification methods used could improve oil-resistances of both the unfilled and CB-filled NR vulcanisates. Of the three surface modification methods used, epoxidation imparts the best oil resistance to NR vulcanisates followed by oxygen plasma treatment and argon plasma treatment. The corresponding oil uptake values were 5.5%, 16.5% and 18.8% for the unfilled NR vulcanisates and 4.3%, 10.1% and 13.1% for the carbon black filled vulcanisates. For each surface modification method, there existed optimum surface treatment times. For epoxidation, the optimum epoxidation times were 3 and 4 minutes for the unfilled and CB-filled samples, respectively. For the oxygen plasma and argon plasma treatments, the optimum treatment time was 5 minutes. Prolonged treatment of the NR surface did not result in further improvement or, in the case of using plasma, degradation could occur if too high a plasma power was used. Thus, for the 100 W plasma, surface degradation appeared to take place with treatment time longer than 5 minutes.</p>