Adhesion of natural rubber film/carboxylated nitrile rubber film (XNBR) interface by blending XNBR with polychloroprene

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Abstract: Natural rubber (NR) latex is an excellent material widely used for making various dipping products. However, the use of powder to prevent the adhesion between gloves is significant issue for user due to its allergy effect. To solve this problem, the powder-free surgical gloves were performed using carboxylated nitrile-butadiene rubber (XNBR) coated on the surface of NR film. Fortunately, the XNBR is not compatible with NR due to the difference in polarities. Hence, we attempted to improve the adhesion between XNBR and NR film by blending XNBR with various content of chloroprene rubber (CR) before coating. The physical properties, including peel strength, surface morphology, and contact angle of the samples were characterized. The NR film coated with CR/XNBR blend at the ratios of 20 to 80% wt. showed the best adhesion. Additionally, the surface morphology of the coated NR after 500% elongation showed smooth surface without fracture observed by scanning electron microscopy (SEM).

Keywords: Natural rubber; Carboxylated nitrile rubber; Chloroprene rubber