

**EFFECT OF VULCANIZING SYSTEM AND
ANTIOXIDANT SYSTEM ON AGED TENSILE
PROPERTIES OF MICROPTIC GLOVES**

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ABSTRACT

MicrOptic glove is a powder free surgical glove which is made out of the natural rubber latex. Thin nature of MicrOptic glove facilitate exceptional dexterity and tactile sensitivity and at the same time providing strength and barrier protection. The aged tensile properties of the glove cannot be maintained in a stable level due to the thin nature of the glove. As stated in the literature, aging properties can be improved through the adequate selection of vulcanizing system and the antioxidant system for the vulcanizate. Therefore, a study was conducted to disclose the effect of vulcanizing system, antioxidant system and their combined effect on aged tensile properties of MicrOptic glove. 0.5 pphr elementary sulphur, 0.25 pphr elementary sulphur with 0.5 pphr sulphur donor compound and 0.25 pphr elementary sulphur with 1.0 pphr sulphur donor compound were utilized as three different vulcanizing systems in MicrOptic formula. Correspondingly 1.5 pphr primary antioxidant, 1.0 pphr primary antioxidant with 0.25 pphr secondary antioxidant and 1.0 pphr primary antioxidant with 0.5 pphr secondary antioxidant were utilized as three different antioxidant systems in MicrOptic formula. Apropos to the treatment combinations, nine trials were carried out with three replicates. One replicate consisted of 13 test pieces. The Aged tensile properties (force at break, elongation at break and 500 % modulus) were tested for all treatment combinations. The study was disclosed that the effect of vulcanizing system and the combine effect of the vulcanizing system and the antioxidant system significantly affect on the aged tensile properties of MicrOptic glove. 0.25 pphr elementary sulphur with 1.0 pphr sulphur donor compound and 1.0 pphr primary antioxidant with 0.5 pphr secondary antioxidant combination offered the better performance for the aged tensile properties of the MicrOptic glove. Moreover 0.25 pphr elementary sulphur with 0.5 pphr sulphur donor compound and 1.5 pphr primary antioxidant combination can be applied for the current MicrOptic manufacturing process with the cost effective way while satisfying the requirements of EN 455-2:2000 standards.

Key words: Aged tensile properties, Antioxidant system, MicrOptic glove, Vulcanizing system