

Surarit Samattai 2014: Influence of Kaolin and Alumina on Cellular Rubber from Natural Rubber for Thermal Insulation Applications. Master of Engineering (Materials Engineering), Major Field: Materials Engineering, Department of Materials Engineering. Thesis Advisor: Assistant Professor Nuchnapa Tangboriboon, Ph.D. 83 pages.

The objective of this work was to study the influences of kaolin and alumina on natural cellular rubber type 5L. It was masticated on a two-roll mill at room temperature for 40 minutes. Natural rubber was compounded with chemicals by a two-roll mill at 70 degree Celcius. The optimum cure time of compounds was characterized at 150 degree Celcius. The results indicated that increasing of kaolin affected the optimum cure time to increase. On the other hand the optimum cure time of cellular rubber decreased when the amount of alumina was increased. The mooney viscosity increased when the amount of fillers was increased. The morphologies of cellular rubbers were analyzed by scanning electron microscope and program imagepro plus. It was found that the pore sizes were decreased when amount of fillers was increased. The pore sizes of cellular rubber filled with alumina were smaller than pore sizes of cellular rubber filled with kaolin. The cellular rubber with filled 40-50 phr fillers influenced flammability as it was decreased.

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Thesis Advisor's signature