

CHEMISTRY

American Rubber Given Service Tests in Auto Tires

Test Tires of Guayule Last About 10,000 Miles; Synthetic Rubber Claimed Superior For Special Purposes

RUBBER from the only source within the borders of the United States, the guayule shrub, has been given a commercial test in automobile tires and tubes. What the motorist and the army could expect from tires that would have to be made from this local source in case of a war embargo was told to the American Chemical Society by J. Harvey Doering of the Firestone Tire and Rubber Company.

The test tires built by this company from rubber that was exclusively guayule failed between 8,500 and 10,200 miles because of tread wear. The inner tubes proved satisfactory throughout the test.

The chief difficulty with the extensive use of guayule rubber is its high resin content, Mr. Doering said. This can be overcome by an expensive process that will remove the resin. The tires tested were not made from treated rubber, but contained from 18 to 20 per cent. of resins. These rubbers are extremely soft and sticky so that it was found necessary to add several "drying" pigments before the tires could be built.

Good for Emergency Uses

Small quantities of dirt and bark in the rubber made it very difficult to build good tubes. Mr. Doering expressed the opinion that these foreign substances could be removed by some straining method such as is used in cleaning reclaimed rubber.

It seems very improbable that the guayule product will take the place of Hevea rubber imported from the East Indies except as an emergency measure, such as war. Uncle Sam probably has enough stored away, in the form of new and reclaimed rubber, to last the nation for perhaps two years in case of war while rubber experts are developing this emergency supply. Under these conditions Mr. Doering promised guayule tires as good as the fabric tires of 1918.

Synthetic rubber made from chemicals is claimed to be superior to natural rubber for special purposes. Tests that

showed its advantageous properties were described by E. R. Bridgewater of E. I. du Pont De Nemours and Company before the Chemical Society.

Although the synthetic rubber known as DuPrene is quite similar to natural rubber in its mechanical properties, it has entirely different chemical properties. This industrial rubber will resist swelling and dissolving in oils and greases. For example, ordinary soft rubber will dissolve completely when kept in hot crude oil for a week, whereas the synthetic rubber swells but does not lose its rubber-like properties.

SOCIOLOGY

Minnesota Research Discloses Tragic Facts on Unemployed

THAT THE LOT of the unemployed in the present depression is hard and that irreparable harm is being done is not questioned. Solid, unequivocal statistics on the human effects of the depression are, however, difficult to obtain.

At Minnesota, pioneering experiment in practical sociology and psychology, the Employment Stabilization Research Institute, one of its industrial social workers, Jessie A. Bloodworth, has investigated the fate of 500 individuals who a year earlier had passed through the model employment offices operated by that organization in cooperation with the state.

The results are illuminating. Only 39.4 per cent. of the 500 individuals studied had found employment that lasted as long as one month since becoming unemployed. Only 42 of the group who found employment were working when the study was made. The others worked only a few months and were again laid off. Most of the jobs secured were on a lower occupational level than the usual occupations

The deterioration of rubber on exposure to air and sunlight is less marked with DuPrene. It is vulcanized by heat alone without the addition of sulfur that sometimes proves objectionable in vulcanized natural rubber products.

Automobile tires have not been made from the synthetic rubber mainly because of its expense. It is used for special purposes such as fabric belts, gasoline hoses, insulated wires, bottle stoppers, etc., that are exposed to oil, and conveyor belts that handle hot abrasive materials.

Dr. Wallace H. Carothers, research chemist of the DuPont Company, concluded that the problem of synthetic rubbers is not solved completely as yet. The chemical mechanism underlying the synthetic manufacturing process is not clear, nor are the reasons for the physical properties of all rubbers. He expressed the opinion that a further study of the giant chemical molecules in rubber would make possible synthetic rubbers of still better properties particularly in connection with specialized uses.

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followed by the individuals. Forty-five per cent. of 500 had been unemployed two years or more before the first of this year. Relatively few of these had found reemployment.

The social worker reports:

"A larger proportion of those under 45 years of age than those of 45 and over were successful in finding employment. A larger number of the later depression than of the early depression unemployed found jobs."

The NRA will be interested in the fact that a quarter of all those who secured some work received less than \$15 a week, and 11.3 per cent. of those who found work worked 70 or more hours a week. Yet only two individuals left their jobs because of dissatisfaction with working conditions.

Important and disheartening is the fact that a definite breakdown in morale was observed in the majority of the persons who have been reduced to destitution through prolonged unemployment.

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