ENGINEERING

Papreg Paper Plastic

Suitable for use in non-structural parts of aircraft, the new laminated paper plastic has a hard, smooth surface, and resists moisture and decay.

➤THE NEW LAMINATED paper plastic now known as papreg, suitable for use in non-structural parts of aircraft and for other commercial purposes, was described in New York at the meeting of the American Society of Mechanical Engineers by E. C. O. Erickson and George E. Mackin of the U. S. Forest Products Laboratory at Madison, Wis. Development of this plastic was carried out at that laboratory.

Papreg has a hard, smooth surface, and resists moisture and decay reasonably well. It has a specific gravity of about 1.4 at a resin content of about 35%. It lends itself to low-pressure molding technique, and has been satisfactorily post-formed to moderate double curvature.

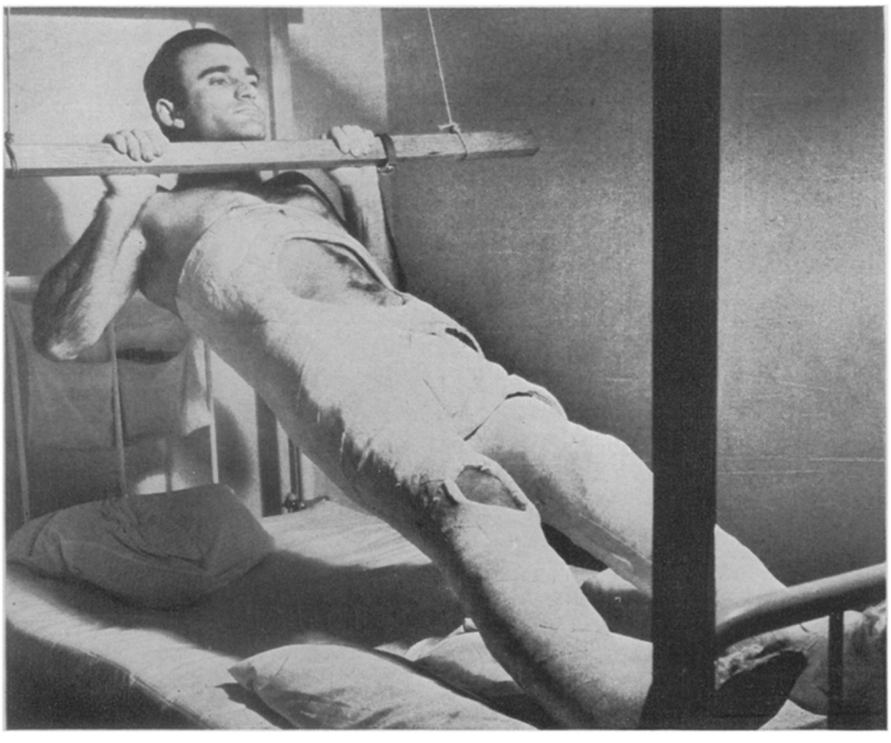
The development work carried out at the government laboratory included investigations on the properties of papreg as influenced by such variables as wood species, pulping processes and paper-making procedures, and by the type and amount of resin and the molding conditions.

"The paper from which papreg is made may differ greatly in tensile strength between the machine direction (grain lengthwise) and the crosswise direction of the sheet. This difference in properties of the base paper," the speakers stated, "is reflected in the strength of the papreg since it can be made with the grain direction of all sheets in the same direction, or with alternate sheets at right angles to each other.

"In the lengthwise direction, the parallel-laminated papreg has tensile and flexural strengths of 36,000 pounds per square inch," they explained, "and in the crosswise direction, strengths of 20,000 and 24,000 pounds per square inch for tension and flexure respectively."

The greatest deficiency of papreg in mechanical properties is in toughness and ductility. Its strength increases with decrease in temperature but shows a general decrease with increasing temperature.

Science News Letter, December 16, 1944



PULL-UPS IN A CAST—This patient is doing pull-ups on his "monkey-stick" to keep the parts of his body not encased in plaster in condition. Calisthenics twice daily are scheduled at Northington General Hospital.

Diesel-Electric Power

➤ "THE DIESEL-electric locomotive has proved that an expensive tool, in its place, can be the cheapest in the long run and has caused more development and research in motive power to be initiated than has anything since the electric locomotive first challenged the right of steam to a monopoly in the hauling of trains." This is the opinion of a railroad survey committee of the American Society of Mechanical Engineers in its report presented at the same meeting by E. C. Young, chairman.

"Modern motive power has demonstrated beyond all doubt," the report states, "that the older locomotive, regardless of differences of opinion as to what constitutes an old locomotive, can no longer hold up its end in the keen competition of mainline traffic." Continued improvement in steam locomotive design, and the new gas-turbine locomotive in an experimental stage of development, "necessitates improvement in design and reduction in price of the diesel-electric road locomotive if its gradual adoption by the railroads as a standard motive power unit is not to be arrested."

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Adhesives Improved

➤ NEW DEVELOPMENTS in the field of adhesives include an adhesive to hold a light-weight deck covering in place, thus providing surfaces on which you can walk without slipping for airplanes and ships; adhesives that stick rubber and synthetic rubber to metal and still other adhesives for the lamination of metal parts and plywood, Fred Wehmer, of the Minnesota Mining and Manufacturing Company, told the meeting.

"The uses to which adhesives are put are almost beyond enumeration," he declared. "The war has put an emphasis on replacement materials, and as a result many new resins and other materials are being used as adhesives."

The speaker outlined many new wartime applications for adhesives that hold promise for postwar development. Among the various types, he pointed to structural adhesives which include vulcanizing adhesives and adhesives used in laminating, or making sandwiches of metals and other materials.

Science News Letter, December 16, 1944