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Fibrous Concrete Has High Fire Resistance

A LIGHTWEIGHT fiber concrete, several times more resistant to damage by fire than normal sand-cement concrete, was developed at the University of Michigan during the war according to a research report on lightweight aggregate materials now on sale by the Office of Technical Services, Department of Commerce. The document is a final report on wartime research sponsored at the educational institution by the Office of Production Research and Development of the War Production Board.

According to Corwin D. Willson, engineer in charge of the research project, fiber concretes are extremely resistant to fire. A 2-in. cube, placed over a large Bunsen burner flame for 20 minutes, will char to a depth of $\frac{1}{4}$ in., whereupon this charred portion serves to insulate the balance of the specimen against disintegration. Due to the poor thermo-conductivity of fiber concrete, the dehydration of the cement matrix does not proceed as rapidly when the surface of the specimen is subjected to high temperatures as in normal sand-cement concrete, Mr. Willson explains.

Fiber concretes were one of many types of lightweight cement-bonded aggregate compositions investigated. The object of the research was to investigate "hard-setting, lightweight plastic compositions having lattice of fibrous materials, a binding matrix of portland cement, and a chemical admix; and suited to be formed by machine into a sheet, or into an insulative panel or floor covering in building construction, or to be poured, sprayed, or otherwise manually or mechanically applied in factory of field fabrication." The composition sought was to be resistant to fire, rot, and termites, and suited to exterior exposure.

8 Thousand Specimens

More than 8 thousand specimens from 225 different materials were prepared and examined. A large number of these compositions had specific merits. One such composition was a solidified "foam" that is actually lighter than cork. In the density range of about 75 lb. per cubic foot, some of the compositions developed compressive strength of above 4 thousand psi. and tensile strength of 750 psi., the re-

port states. In the density range of 40-50 lb. per cubic foot, approximating the weight of hard wood lumber, many of the compositions showed sufficient strength to be of practical use in building construction.

The report contains the names and physical and chemical compositions of raw materials used and the newly-created compositions. Many types of organic fibers including balsam fiber, St. Louis cottonwood wool, and yellow pine fiber, were found promising. Cotton, flax and rice by-products and many other types of fibers cheaply available as farm or industrial wastes were also found suitable, the report states. The best inorganic fiber tested was crude ground asbestos of the type commonly used in furnace insulation.

The report contains numerous tables summarizing test data on various compositions. One of these tables presents

test results of 50 separate batches using various amounts of by-product cotton.

The research engineer states that "with no great amount of additional study, cotton by-products may be used successfully in the manufacture of boards, panels, shingles, pipe, tile, etc."

Several appendixes to the report give a detailed analysis of experience with various types of admixes, cements, wetting agents, chemicals and fibers, and batch test averages for the test cubes prepared.

Mimeographed copies of the 185-page report (PB-2573; *Properties of assorted light weight aggregate materials*) sell for \$2. Orders should be addressed to the Office of Technical Services, Department of Commerce, Washington 25, D.C., and should be accompanied by check or money order payable to the Treasurer of the United States.

Universal Will Make Small Sanitary Pipe At Rochester Plant

TO HELP alleviate the shortage of sewer pipe for construction, the Universal Concrete Pipe Co. has added the manufacture of small size sanitary sewer pipe in an expansion move at its Rochester, New York, plant. L. E. Barrett, local sales representative for the company that has 15 plants in eight states, reports that pipe-making machinery has been installed to produce 4, 6, 8, 10, and 12-in. diameter pipe. Previously, this plant concentrated on manufacturing large-diameter reinforced concrete pipe ranging up to 72 in.

Universal, which has been in the pipe-making business for the past 27 years, also has added the manufacture of concrete masonry units to its Rochester plant.

Fittings for the small-size concrete pipe also are ready for delivery under the stepped-up production schedule. The small pipe is made on a spinner-type machine.

Universal has plants in Syracuse, Port Washington, and Binghamton, New York; as well as in New Jersey, Pennsylvania, Georgia, Alabama, West Virginia, Tennessee, and Ohio.

Cement Production is up 6 Per cent Over February 1947 Output

PRODUCTION of 13,347 million barrels of cement in February 1948, as reported to the Bureau of Mines, United States Department of the Interior, was 6 per cent above that reported for February 1947. Seventy per cent of capacity was utilized, an increase of 2 per cent over that reported for February 1947. Mill shipments reached 8,338 million barrels in February 1948, a decrease of 1 per cent from that reported in February of the previous year. Stocks of 20,345 million barrels on Feb. 29, 1948 were 1 per cent above those reported for February 1947. Clinker output in February 1948 reached 14,444 million barrels, an increase of 7 per cent over that reported for February 1947.

Demand for cement in February 1948, as indicated by mill shipments, is still above the 1935-39 average. The decline of 1 per cent below the February 1947 figure was caused largely by a reduction in shipments from the Great Plains states, from Texas north to Minnesota and South Dakota.

The long-term trend in production of finished portland cement continues its upward course.

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