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*File Rock Wool
Spun Glass*

Extract from letter received from Mr. NELSON.

KOBE.

5th February, 1940.

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ROCK WOOL AND GLASS FIBRE.

by Sampei Katakura.

(Mr. Katakura is president of the Nitto Spinning Co., one of the leading producers of staple fibre and other synthetic textile materials.

Everywhere in volcanic Japan there is an abundance of Lava. Indeed it may not be too much to say that about 20% of the country's surface is covered by this particular type of rock. During the eruption of a volcano the form of Lava known as "Pele's hair" may be produced, and this substance is Nature's rock wool, a fore runner of man-made rock wool. Volcanic Japan is therefore so well equipped by nature for the production of this interesting fibre that no other country in the world is in a position to compete effectively in its production.

(Fibre produced from volcanic rock has an excellent heat preserving property, and while the technique of manufacturing it into an effective textile fibre has not yet been evolved, the impression prevails that a practical method will be developed before very long.

As a substitute for asbestos for insulating purposes, rock wool has already developed a definite field of application and is widely known by the name of artificial asbestos. Japan is a fairly large consumer of natural asbestos, as is evidenced by the imports from such leading world sources as Canada, Africa and Soviet Russia. The nations' imports amounted to 20,000 tons in 1935; 30,000 tons in 1936 and 50,000 tons in 1937, and have been growing consistently. Japan's resources of natural asbestos are rather limited and offer comparatively little prospect of being developed industrially under the prevailing circumstances. This lack, however, is more than offset by the rock wool resources referred to above, which are extensive and ready for immediate tapping.

(Rock wool is not at all fragile as is slag wool; it fulfills every requirement demanded of natural asbestos, and its future is one of unqualified optimism. Manufacturing facilities sufficient to turn out 100 metric tons of the material are scheduled to be completed by end of this year, and when they are in full operation Japan's asbestos needs will be supplied on a basis very near to self-sufficiency.

Rock wool has various other valuable properties beside that of preserving heat. It is sound arresting, heat resistant and is useful for filtering, machine packing and slate making purposes. In view of present day air defence needs, rock wool manufactures should be able to create a broad market for national defence and general structural purposes, while the noise insulating quality of the product may be exploited in both surface and underground transportation systems and other sound proofing uses in cities and towns.

In the field of glass fibre production Japan has made good progress and is now producing a thread that consists of several hundreds of filaments. The finest textile fibre thus far made is staple fibre of 1.5

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deniers, whereas the filament in the Japanese glass fibre yarn is so fine that it measures only about 5 microns in diameter or one fifteenth to one twentieth as much as a single staple fibre filament. Tape made of this glass fibre yarn, has good strength and durability, and the day may not be far distant when piece-goods for wearing apparel are successfully produced from this material.

For the time being, however, the most extensive use for the product is believed to be as electric motor insulation. The insulating materials now generally employed are organic substances, but as their resistance to heat is very low, the motor has to be operated at a low temperature and consequently only a small amount of electric current can be used. At the same time, in order to insure safety the electric motor must have a bulk altogether out of production to the capacity. The use of an insulating material with a much higher degree of heat resistance and which would last much longer in service, would revolutionize motor design.

Glass fibre is an ideal material for this purpose. It has a high degree of heat insulating property and a strong resistance to heat, and would permit a motor to accommodate a greater volume of electric current. It is thought that by using this insulating material it will be possible to increase the power output of motors to three times the present quantity. Moreover, in contrast to the present practice of operating motors at temperatures as low as 50 to 60 degrees Celsius, the same motors if insulated with glass fibre may be operated with perfect safety at temperature of 200 to 300 degrees Celsius or even higher. A smaller motor means a saving in the materials of which it is manufactured such as iron and steel, copper wire, etc. Another advantage would be found, for example in the design of the tram car, the body of which must be set fairly high above the wheels, with the result that rocking and swaying are accentuated. Owing to its small size, a glass yarn insulated motor will enable the floor to be placed considerably lower, which would reduce this undesirable effect.

The use of the new insulating material should virtually eliminate the danger of fire from short circuiting, because, unlike the insulating materials now used, it does not deteriorate with age.

- The Oriental Economist -

(June number, 1939).

Further Note in "ROCK WOOL" Production
in Japan.

Meantime the construction of Nitto's Rock Wool plants has been steadily progressing. Equipment for the production of 30 metric tons daily has been installed at the Fukuyama plant; the Tokyo plant, with a capacity of 50 metric tons daily, is expected to be ready shortly, and the Osaka plant is also nearing completion.

The aggregate daily capacity is expected to reach 30,000 metric tons by the end of this year. Thus far the company's rock wool products have been marketed only on an experimental basis but they have established good reputation. A daily capacity of 100 metric tons should enable it to produce 30,000 metric tons a year on the assumption that the plants will be operated for 300 days, and if the profit per ton is assumed to be ¥ 50, the aggregate profit would ¥ 1,500,000 annually or an annual yield of 32% against an investment of ¥ 4,700,000. The earnings from rock wool manufacture will no doubt improve the firm's business; and as a matter of fact the executives expect the profit on the product to exceed ¥ 50 per ton. The fact that construction expenses for all the rock wool plants are being paid out of undivided profits makes the company's future appear particularly bright.

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