



Johns-Manville SHEET and BLOCK INSULATION for heated surfaces (continued)

PLAINTIFF'S
EXHIBIT
K-1475

DEFENDANT'S
EXHIBIT

02-44

Asbestos Roll Fire-Felt

(For Temperatures to 1000° F.)

Asbestos Roll Fire-Felt is a soft, flexible asbestos felt for insulating heated surfaces where space does not permit the use of thicker or more rigid forms of insulation.

This material is furnished in 32, 12, 24 and 1 in. thick, in rolls 3 ft. wide, containing about 100 sq. ft. Weight, about 1.2 lb. per sq. ft., 1 in. thick.

Super Fire-Felt Sheets and Blocks

(For Temperatures to 700° or 1000° F.)

Super Fire-Felt is a light weight, efficient, resilient insulation made of felted asbestos fibre. Used for lining boiler tube doors and the air passages on ventilated furnace walls, and in other locations where the insulation may be subjected to vibration or to strains caused by expansion and contraction.

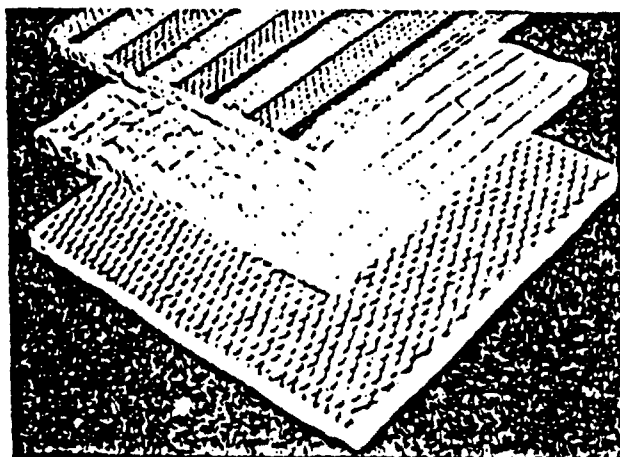
Furnished in sheets 24 x 36 in. and blocks 6 x 36 in., 1/2 to 4 in. thick, also in special sizes and irregular shapes to order. Weight, about 1.7 lbs. per sq. ft., per inch thick.

Temperature limit, if effectively supported between metal sheets or brick lining and steel shell, 1000° F. If less effectively supported or subjected to removal and replacement, 700° F. should be considered the temperature limit of the material.

Banroc Blankets

(For Temperatures to 1000° F.)

Banroc Blankets are made of Banroc (rock wool) felted between various fabrics, usually metal, such as galvanized wire netting, copper-bearing metal lath, and rib lath. Used for insulating ovens and for similar purposes. Standard sizes, of most types, 24 x 36 in. and 24 x 48 in., in thicknesses of 1 to 6 in.



Banroc Blankets

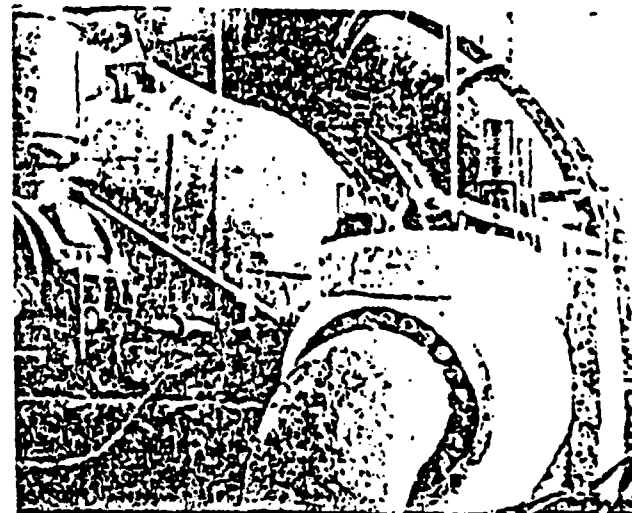
Showing some of the backings available

Asbestos Blankets

(For Temperatures to 900° F.)

Asbestos Blankets are made of quilted asbestos cloth filled with asbestos fibre and tufted with wire at close intervals. Used for insulating irregular surfaces where readily removable insulation is desired, such as paper digester shells and steam turbine casings.

Furnished in single or double layer construction, 1 1/2 to 2 1/2 in. thick. Made to suit the individual installation. Recommendations on receipt of details.



J-M Asbestos Turbine Blanket

This material can be readily removed and replaced

Improved Asbestoecel Sheets and Blocks

(For Temperatures to 300° F.)

Improved Asbestoecel sheets and blocks, made of alternate plain and corrugated asbestos felts built up to various thicknesses, are used for insulating such equipment as low pressure boiler, feed water heaters and warm air ducts.

Furnished standard in 4 plies per inch of thickness in sizes 6, 9, 12, 18 and 36 in. wide by 36 or 72 in. long, from 1/2 to 4 in. thick. Weight, about 1 lb. per sq. ft., per inch thick. Embossed material with 6 plies per inch is also available.

Asbestos Paper, Roll Board and Sheet Millboard

JOHNS-MANVILLE furnishes a complete line of asbestos paper (weights from 6 to 32 lbs. per 100 sq. ft.); a best roll board (1/2, 3/4 and 1 in. thick); and a best sheet millboard (1/2 to 1 in. thick). These products are recommended where relatively thin protection against flame, heat or acid fumes is desired.

PRODUCED
JM - 83

processing of oils and chemicals. Such close temperature control cannot be maintained without adequate insulation to reduce heat transfer.

Thickness of Heat Insulation

The economical thickness of insulation depends primarily upon the temperature and the cost of heat. Thickness is ordinarily computed on the basis of fuel costs and operating conditions so the heat which passes through the insulation is only that portion which can not be economically saved. Sometimes special conditions require thicker insulation than warranted by fuel saving alone.

The economical thickness of pipe insulation also depends on the pipe size. While it is a fact that small pipes would have to be more heavily insulated to give the same saving of heat, it is nevertheless true that the larger pipes should be provided with thicker insulation in order that the maximum net saving be realized. A 1" pipe with 1" thick insulation will lose heat more rapidly per sq ft of pipe area than a 10" pipe with the same thickness of insulation; because the outside surface of the insulation on the 1" pipe is nearly 200 percent greater than that of the pipe, while the outside area of the insulation on a 10" pipe is less than 20 percent greater. As a result of the greater area through which heat may flow, the losses from the 1" pipe must be greater.

The matter of net saving takes into account both the saving per year and the cost per year of effecting that saving. Therefore, since the insulation on a 1" pipe costs from 1½ to 3 times as much per square foot of pipe surface as on a 10", and since each inch of thickness on a 10" pipe saves more heat than the same on a 1", it is at once evident that it pays to put a thicker insulation on a 10" than on a 1" pipe.

Selection of Insulation

To be adaptable, insulation must be of such form as to be easily applied. It must have heat-resisting qualities sufficient to withstand successfully the highest temperatures to which it will be subjected. It must be sufficiently strong and durable to assure long life. Adaptability also depends upon many other conditions incidental to the particular application.

The insulating value of a commercial insulation depends primarily upon the small voids which it contains. In order to be most effective, the voids must be enclosed and so small that circulation within them and radia-

tion across them will be at a minimum. Small void size is particularly important at high temperatures because of the rapid increase in convection and radiation with rise in temperature.

From the five mineral products— asbestos, magnesium carbonate, diatomaceous silica, refractory clays and mineral wool—Johns-Manville furnishes insulation in the forms of sectional pipe insulation; insulating sheets, blocks, bricks and blankets; insulating cements and fills; together with accessory finishing materials in the form of cements, coatings, papers and felts.

Johns-Manville offers a complete line of insulation materials for every kind of equipment used throughout the entire range of industrial processes where temperatures vary from sub-zero to 3000 F and more. A few of these materials are shown in the chart below. The recommended temperatures are those applied to the insulation, rather than process temperatures.

