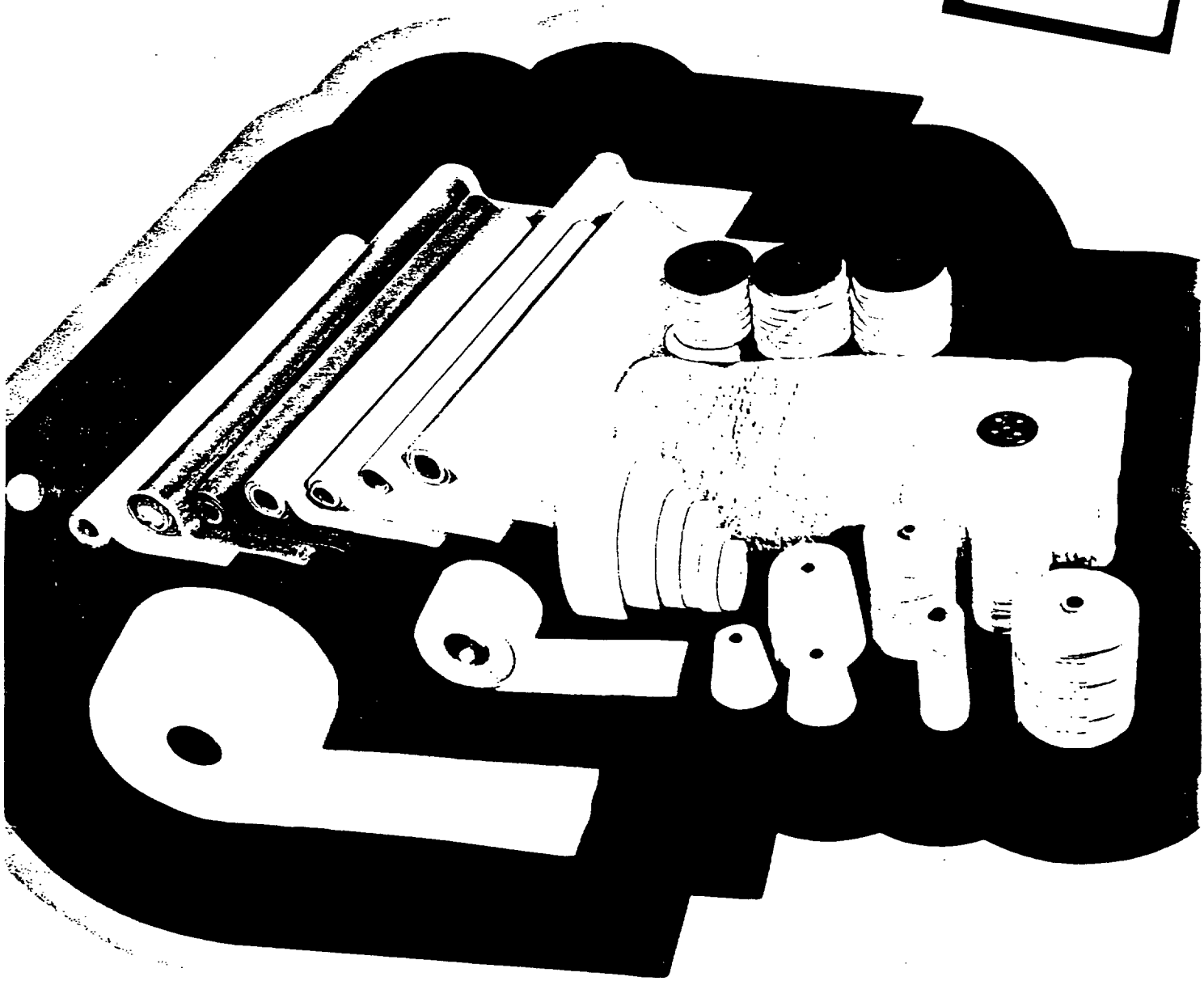
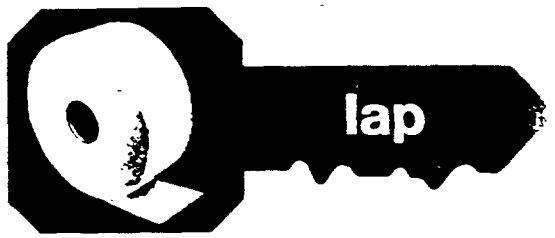
PORTER

PLAINTIFF'S
EXHIBIT
AL-1290

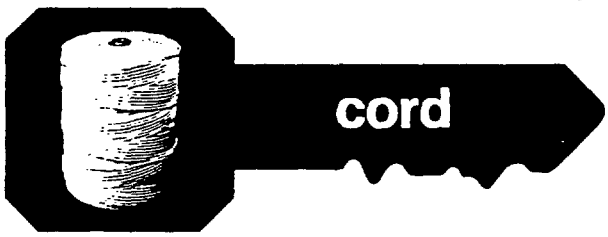


ASBESTOS TEXTILES

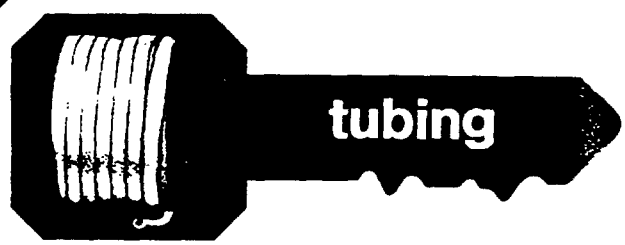
Consistent Dependability & Uniformity...



are the Keys to Quality











PORTER THERMOID DIVISION
H. K. PORTER COMPANY, INC.

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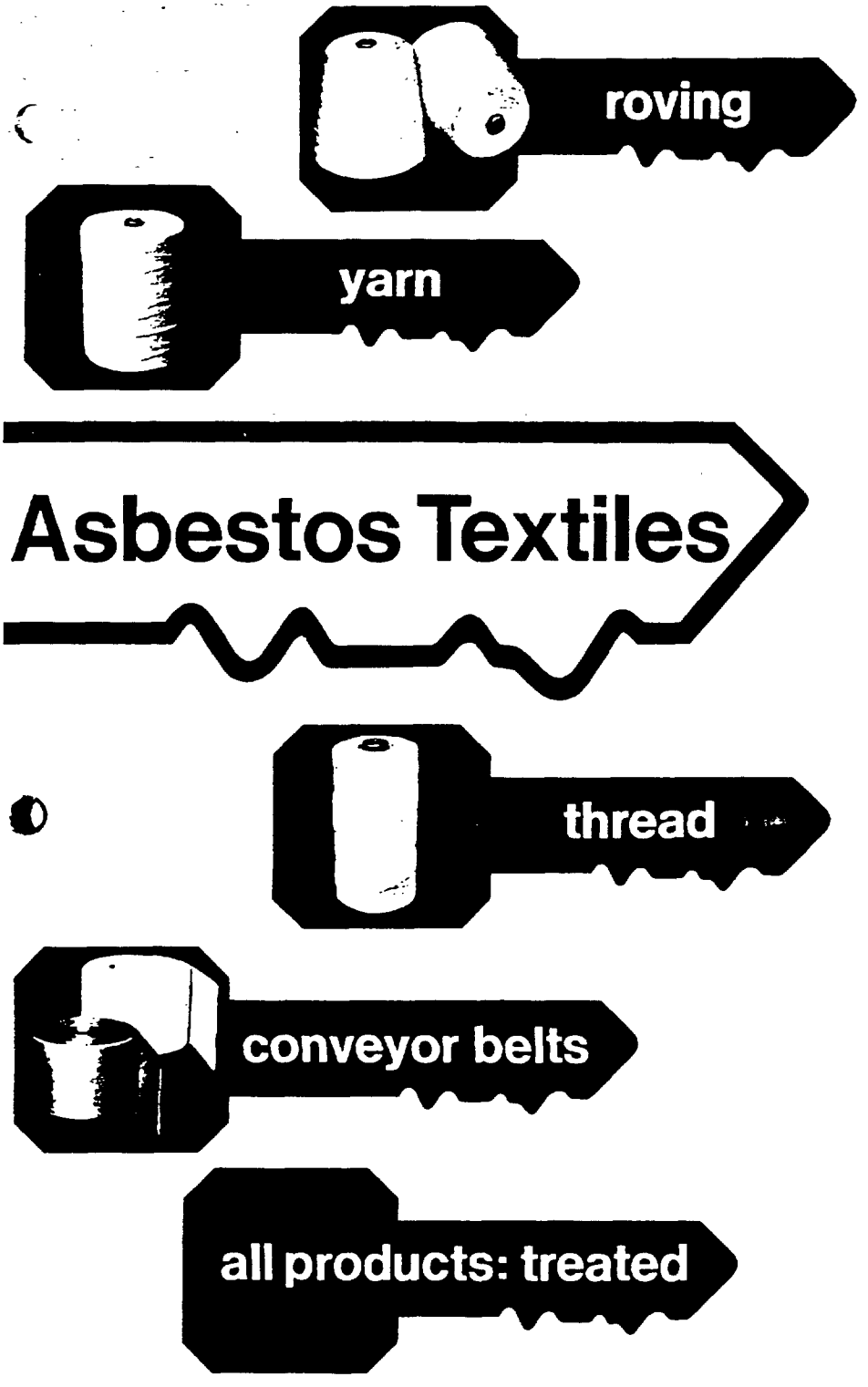

Asbestos Textiles

Uniformity is the key at H. K. Porter Company, Inc. in whatever asbestos product you need, whether it is lap, roving, yarn, cord, thread, rope, wick, tubing, cloth, treated or untreated textiles, tape or conveyor belting.

An aggressive research and development program continually evaluates material and process development. The wealth of knowledge and technical ability that has developed from many years of experience in asbestos research and in selecting asbestos fibers and processing them, provide Porter with the background of technology and manufacturing ability to produce asbestos products with a uniformity far above recognized industry standards.

Uniform widths and thicknesses, even edges, consistently high tensile strength, and — probably most important of all — extended functional life and more dependable performance are a few of the benefits you get from traditionally superior Porter asbestos products.

But the **product** is not the whole story! A large part of the Porter tradition is **service.** Contact your Porter representative . . . let him help you with your asbestos problems. Porter research and development facilities and manufacturing plants are available to service your needs. Highest quality materials, manufactured under rigid quality control, and delivered to you faster, are a few of the reasons you should talk to Porter first.

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Asbestos

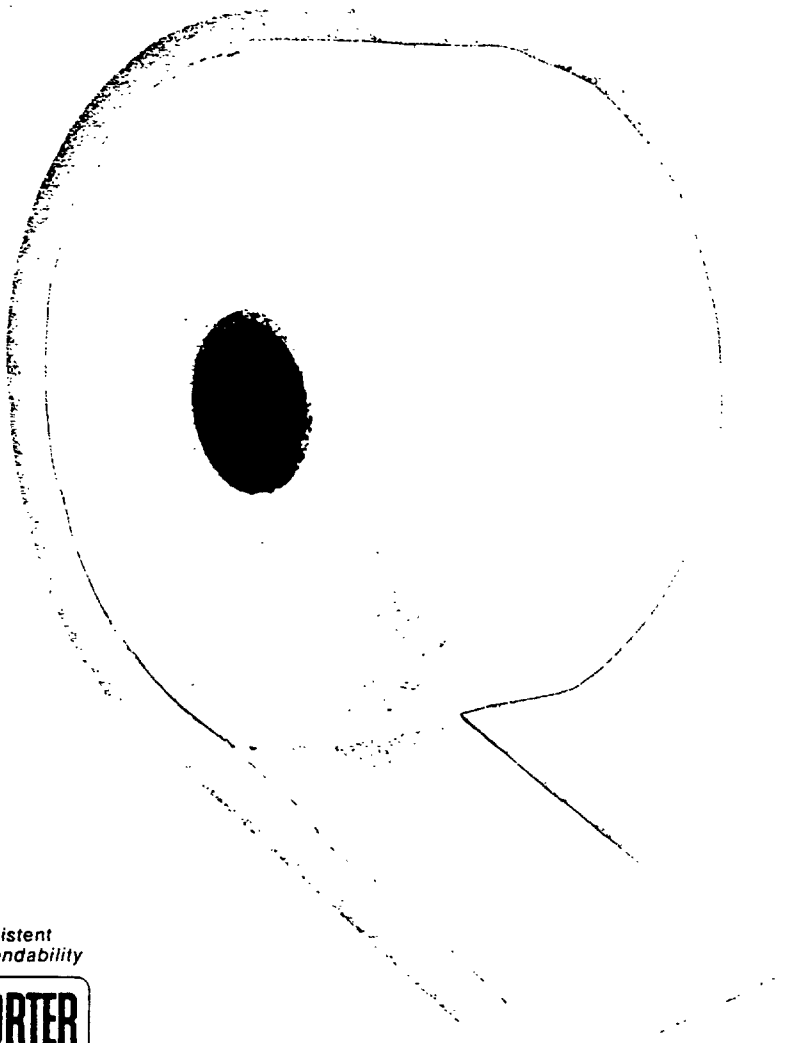
Lap

Lap is a felted form of carded asbestos fibers which have been blended with organic fibers. Asbestos lap is used primarily by the electric wire and cable industry as insulation for heater cords, fixture wires, and other electrical conductors. The lap is recarded and applied to the wire in successive thin spiral wraps that are built up to the desired thickness.

A homogeneous blend of uniformly screened fibers provides assurance of uniform coverage when the lap is applied to the electrical conductors. To achieve a high degree of uniformity, Porter lap is produced as a double-carded solid lap and is not made up of several individual strands of slivers. Higher operating efficiencies are realized during the application of the asbestos to the wire, and the finished product exhibits more uniform insulating characteristics.

Laps are available in weights of 750, 1000, 1500 and 2000 grains per linear yard. Standard packaging is on reinforced paper tubes with 3 inch inside diameter and length varied according to customer requirements.

Underwriters' grade is the most common. However, Porter lap can be furnished in all standard ASTM grades.



Consistent Dependability

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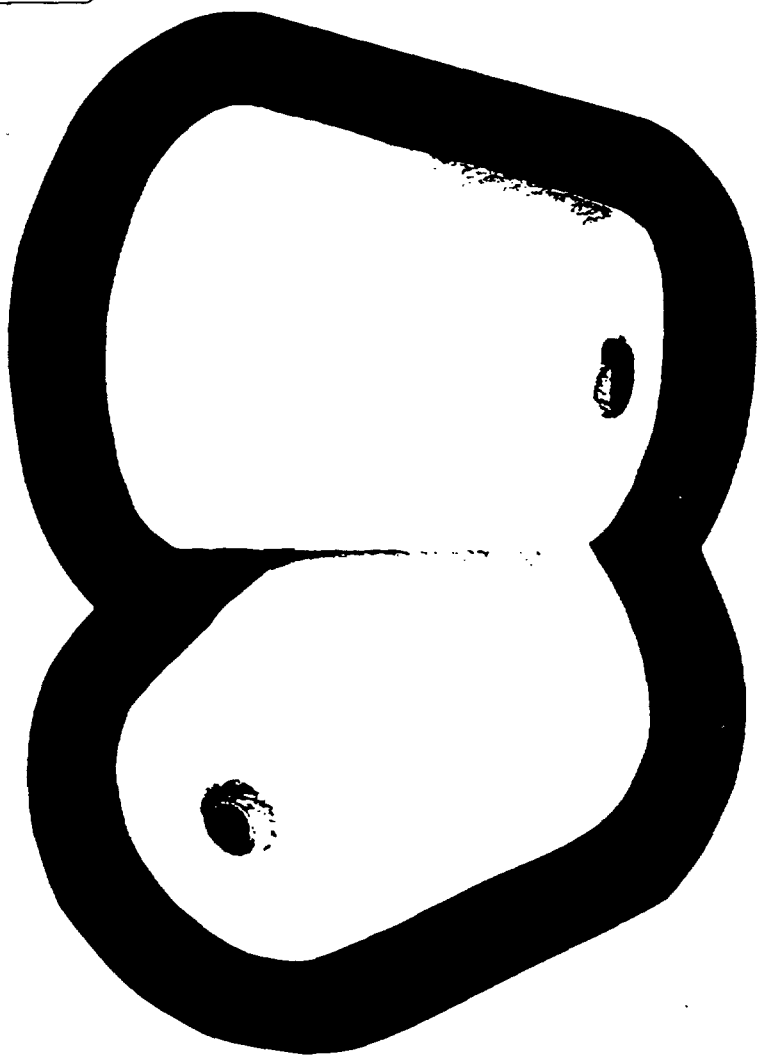
Asbestos

Roving



Roving is made of cardec asbestos fibers which have been blended with organic fibers and then rubbed into the form of a single untwisted strand. Porter Asbestos Roving is available in various degrees of density, from soft-rubbed which is very light and fluffy, to hard-rubbed which is firmly compacted. Asbestos rovings were developed for the electric wire and cable industry for use as insulation for heater cords, cables and electrical heating elements. The strands are wrapped or "served" to form a relatively soft, complete sleeve over the wire.

The high uniformity of Porter asbestos rovings provides savings for the user by allowing the most efficient use of automatic wire-covering machines. Rovings of uniform thickness and uniform tensile strength are the answer to many production problems encountered in the automatic serving of wire and cable.

Porter roving is supplied in two basic types:

Plain Roving is composed only of carded asbestos fibers blended with cotton or other organic fibers and condensed into a single untwisted strand.

Reinforced Roving is similar to plain roving but has a core of cotton, glass or synthetic thread for increased tensile strength.

Porter rovings are available in all standard ASTM grades. The table on the left lists some of the most popular standard reinforced rovings manufactured by Porter; however, custom products for specific applications are a large part of the business at Porter, and special modifications and custom packings can be furnished. Porter experts will be glad to discuss your applications with you, and recommend the best asbestos product for your particular needs.

Porter Reinforced Asbestos Roving

Grade	Core	Approximate Tensile (lbs.)	Standard Sizes (•)						
			5 Cut	6 Cut	7 Cut	8 Cut	10 Cut	12 Cut	14 Cut
Underwriters'	30/2 Cotton Yarn	1.5	•	•	•	•	•	•	•
Underwriters'	210 Nylon and Cotton	3.0	•	•	•	•	•	•	•
*Underwriters'	201 Cotton Yarn	1.00	•	•	•	•	•	•	
A	30/3 Cotton Yarn	2.0	•	•	•	•	•		
AA	Glass	1.25	•	•	•	•	•	•	•
AAA	*150/2/2T Glass	5.0	•	•	•	•	•	•	
AAAA	150/2/2T Glass	5.0	•	•	•	•	•	•	

Available packaged on cones or tubes
*Not recommended for use on bare conductors

Note "Cut" indicates the approximate length of roving per pound, measured in hundreds of yards. For example: 12 Cut runs about 1200 yards per pound.

Yarns

Some typical uses of Porter asbestos yarns are: fireproofing electrical cables; manufacturing of felts for the paper industry; for wiping wires in galvanizing operations; for use in high-pressure steam hose; for packing and sealing; and for manufacturing asbestos cloth, tape, tubing, cord and thread which are used for innumerable other purposes.

Porter supplies asbestos yarns in all standard ASTM grades and cuts from 5 cut and up. Porter yarns are available in plain, metallic or reinforced; in single ply or multiple ply construction, treated or untreated; with "S" twist or "Z" twist.

The following definitions and specifications are standard within the asbestos industry, and are given here for your information and reference:

Asbestos yarn: Yarn made by mechanically twisting asbestos roving to give it higher tensile strength.

Plain asbestos yarn: Yarn which consists of asbestos fibers, or a blend of asbestos and other fibers. The other fibers which are usually cellulose or synthetic fibers are introduced in small percentages during processing either to improve the spinning properties of the asbestos fiber or to meet certain specifications in the end product.

Metallic asbestos yarn: (Also known as wire-inserted yarn) Plain asbestos yarn with an insert of fine wire. The standard insert is one or more strands of brass wire, but for special purposes, wires made of metals or alloys such as copper, zinc, nickel, Nichrome, Inconel, and Monel may also be substituted for brass. Metallic asbestos yarns are extensively used in manufacturing asbestos textiles where the end product requires unusually high tensile strength, exceptional resistance to heat or abrasion, or a combination of these properties.

Reinforced asbestos yarn: Asbestos yarn with an insert of yarn made of other fibers, usually one of several organic fibers. Glass filament may also be used. Reinforced yarns, also referred to as inserted yarns, are particularly adapted to the braiding and weaving processes because of their higher-than-average tensile strength.

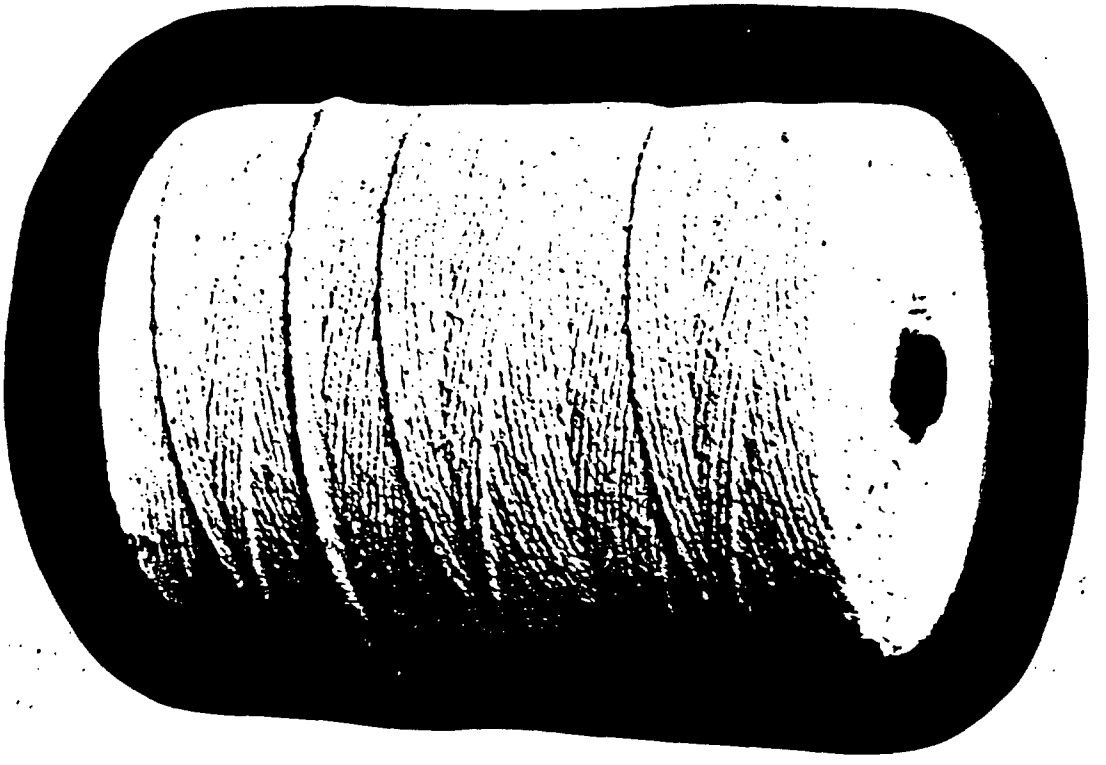
Single and plied yarns: The plain, metallic, and reinforced asbestos yarns described are produced as both single and plied yarns, the latter consisting of a number of strands of single yarns twisted together to form a heavier yarn of greater strength.

Treated yarn: Asbestos yarn that has been coated or impregnated with chemical compounds. These compounds add desired characteristics such as, increased tensile strength, uniformity, and abrasion resistance.

Grade: The "Grade" of an asbestos yarn is determined by the percentage of asbestos content by weight

Cut: Unit of yarn measurement that indicates the number of 100-yarn lengths per pound.

Twist: A yarn has "S" twist if, when held in a vertical position, the spirals conform in direction of slope to the center section of the letter "S". It has "Z" twist if the spirals conform in direction of slope to the center portion of the letter "Z".



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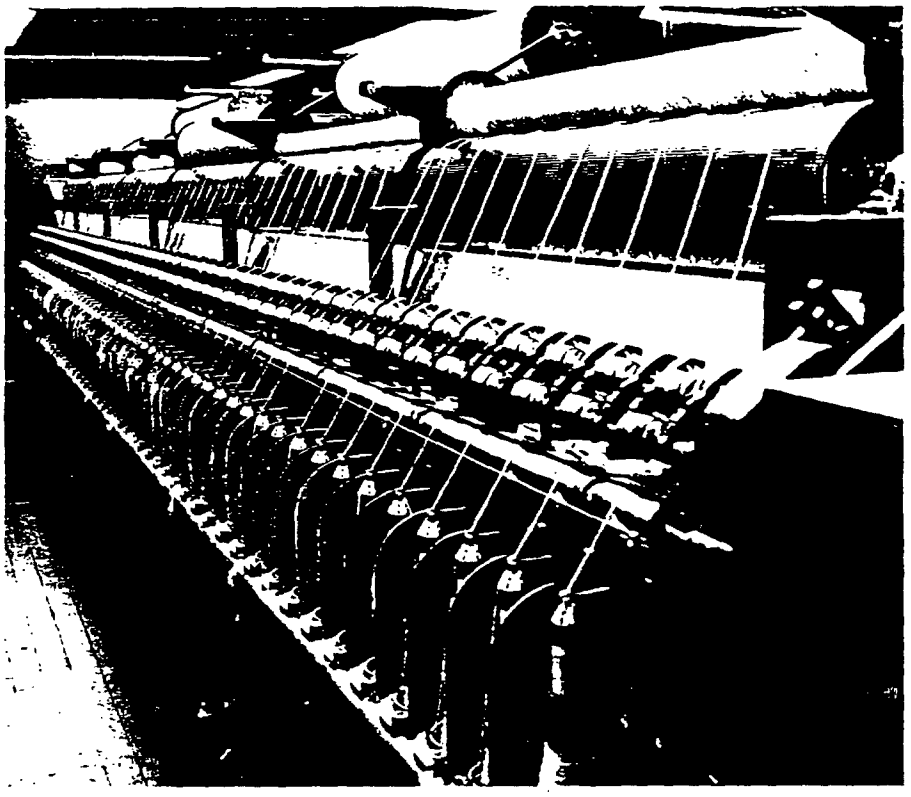

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Yarn Numbers: In the asbestos textile industry, the yarn numbering system used designates the cut, number of plies, and whether the yarn is plain or metallic. In a four-digit figure, the first two digits indicate the cut, the next digit indicates the number of plies, and the final digit indicates the number of metallic strands. If the final digit is a zero, it indicates a plain (nonmetallic) yarn. For example: No. 1022 is a 10-cut, 2-ply metallic yarn containing two wires, and No. 2430 is a 24-cut, 3-ply plain yarn. In a three digit figure, the first digit only indicates the cut. Thus No. 810 is an 8-cut single-ply plain yarn.

Porter Asbestos Yarn
(Underwriters' Grade) Approximate Diameter (inch)

Cut	2 Ply	4 Ply	6 Ply
10	.0358	.0516	.0630
12	.0328	.0463	.0572
14	.0304	.0430	.0526
16	.0285	.0403	.0491
18	.0268	.0378	.0464
20	.0256	.0359	.0433
22	.0242	.0342	.0422
24	.0232	.0329	.0404
26	.0223	.0315	.0385
28	.0215	.0303	.0372
30	.0208	.0293	.0359
32	.0200	.0283	.0346
34	.0194	.0274	.0339
35	.0192	.0271	.0334
40	.0179	.0253	.0310
45	.0169	.0240	.0292
50	.0160	.0227	.0278

Higher grades result in slightly smaller diameter.

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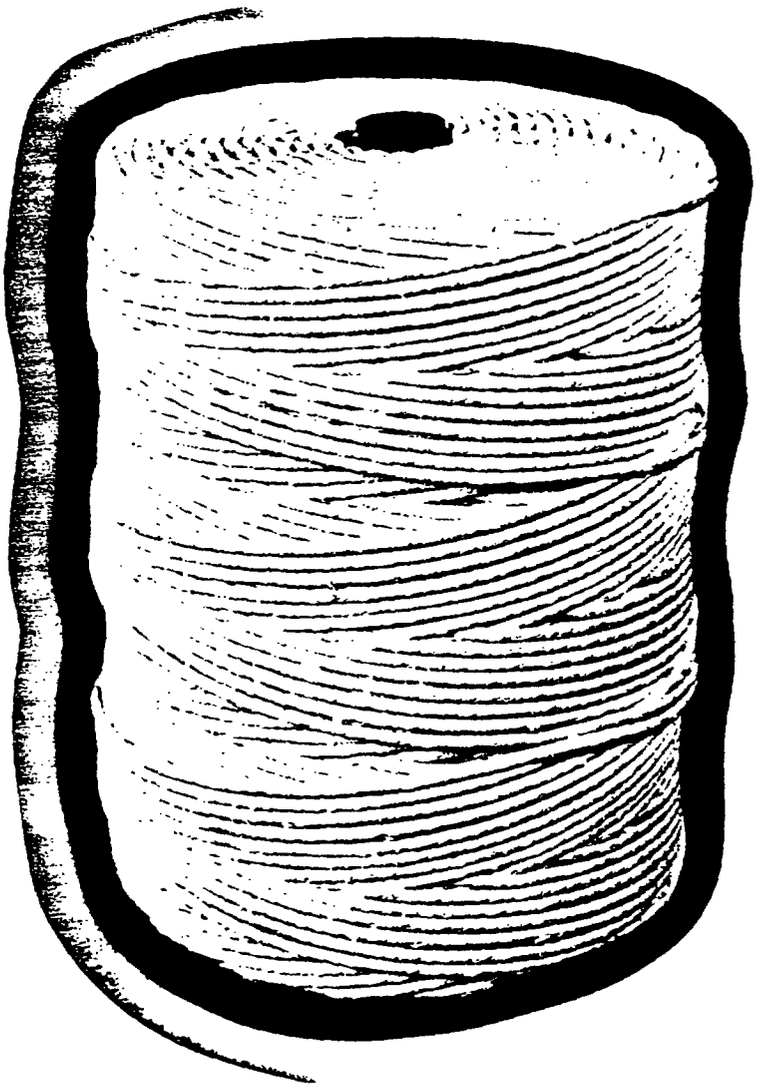
Asbestos

Cord

Porter Asbestos Cord is made in a range of sizes from 1/16" to 3/8", and is available in either TWISTED or BRAIDED construction. TWISTED cord is made by tightly twisting together several strands of yarn. Porter develops maximum tensile strength and exceptional uniformity in the cord by using high-quality uniform yarns, and keeping the individual strands under equal stress while they are being twisted together. BRAIDED cord is produced by braiding one or more jackets over a yarn core.

Some of the many uses for asbestos cord include its use as a core for electrical resistance wires such as used in heating pads and electric blankets, as a seal on high-temperature corrugated-metal gaskets, as a valve-stem packing, as insulation for glass-handling tools, as wicks for cigarette lighters, and as braided wall reinforcing for steam hose. The applications are almost limitless, because of the many possible variations in cord construction. The yarn used may be single or plied, ferrous or nonferrous, sized or unsized, plain or metallic; and the cord can be furnished either untreated or treated with various coatings or impregnations to fit special purposes.

The table below shows the approximate number of feet per pound of some of the standard sizes of asbestos cord.



Porter Plain Asbestos Cord

Diameter (inch)	1/16	3/32	1/8	3/16	1/4	3/8
Approximate Length (feet per pound)	540	273	150	86	43	19

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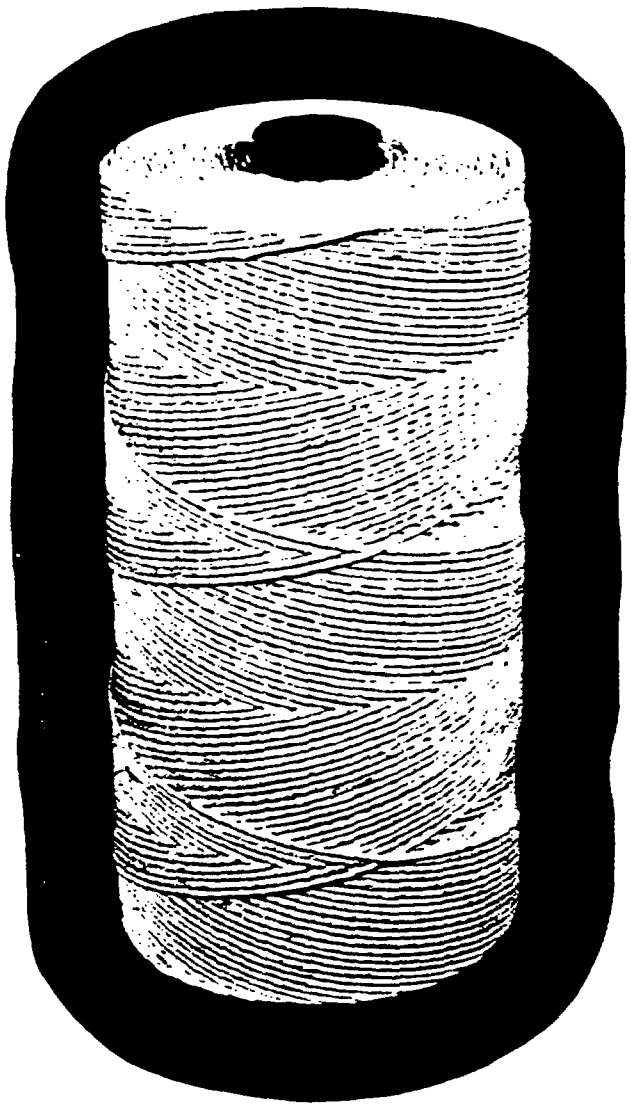
Asbestos

Thread



Asbestos thread is made by treating asbestos yarn with special compounds to lay the fibers and to produce an exceptionally smooth, uniform finish. High-quality yarns result in high-quality thread; and Porter asbestos yarns produce thread that is not only uniform in construction and appearance, but also has exceptionally high tensile strength.

Porter asbestos thread is ideal for machine sewing of asbestos fabrics used in the manufacture of theater curtains, belting, and safety clothing. Other uses include sewing insulation jackets on piping and turbines, tying incandescent gas mantles, and wrapping electrical resistance wires. The nonslip characteristic of asbestos thread makes it superior to glass yarn for applications such as fastening the asbestos roving insulations at each end of heater cords.

Porter asbestos thread is available in plain or wire inserted, and can be furnished in all standard ASTM grades. Both "S" and "Z" twist are available.

Consistent Dependability

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ALCOA0000009521

Cloth

[illegible] cloth in all [illegible] types of [illegible] or rein- [illegible] obtained in [illegible] in [illegible] from 0.015" to [illegible] thicknesses [illegible] range from tight [illegible] weights [illegible] pounds per square yard. [illegible] asbestos cloth are [illegible] other widths can [illegible] special application. [illegible] lists some [illegible] asbestos cloths. The [illegible] by any means represent [illegible] but merely serve [illegible] widely used ones. [illegible] asbestos cloth [illegible] military [illegible]



Treated Asbestos Cloths

In addition to producing a complete line of untreated woven asbestos cloths, Porter manufactures asbestos fabrics with a variety of special treatments.

FLAMEGUARD TREATMENT, a patented treatment developed by H. K. Porter Company, Inc. for the safety-clothing industry, absolutely flameproofs the cloth—AND UPGRADES THE HEAT RESISTANCE OF EACH GRADE OF CLOTH APPROXIMATELY ONE GRADE. Available in all weights of fabrics, this unique treatment, in addition to flameproofing the non-asbestos fibers, increases the tensile strength of the fabric and also renders it more resistant to abrasion. Asbestos cloth which has been treated with FLAMEGARD is more flexible and more resilient than the same cloth untreated; ravel resistance is improved, linting is reduced, and the treated cloth has a better, fuller hand than untreated cloth. The treatment applied to cloth for use in safety clothing also increases the smoothness of the material and allows the cloth to slip over itself easily.

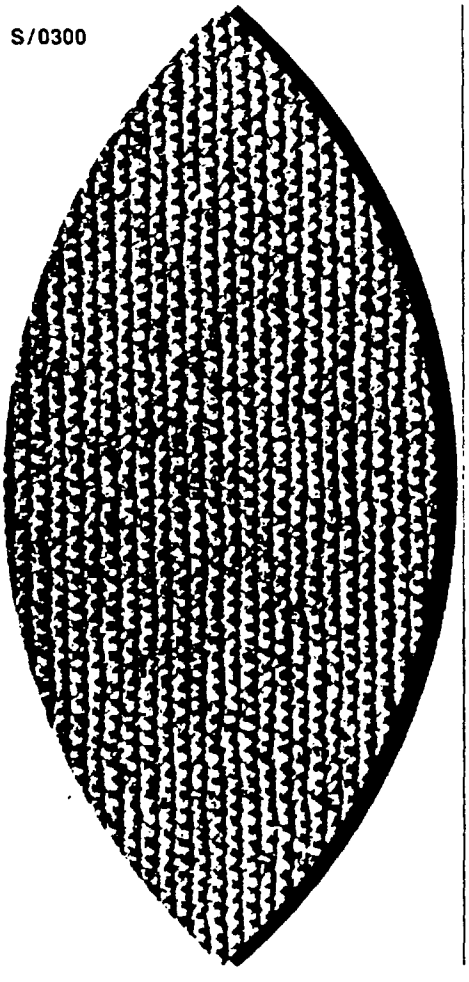
FLAMEGARD TREATMENT is mildew resistant and non-toxic and will not irritate the skin. Porter has been supplying FLAMEGARD treated cloth, treated with this same formulation, for over ten years without a single case of skin irritation or dermatitis reported.

Coated Asbestos Cloths

Asbestos Cloth Coated for Molten Splash Repellency

FLAMEGARD treated asbestos fabric is now available coated with a repellent compound to shed acids, steam, water, oil—even 3000°F. molten metal.

Although any Porter asbestos cloth may be coated, the particular fabrics generally chosen for Molten Metal Splash Protection have exceptional tensile strength. When the FLAMEGAR treatment and the specially formulatec coating compound is applied, the tensile strength is further increased. Apparel made from this fabric is lint-free, light-weight, and less cumbersom to wear than most conventional asbestos clothing, and allows greater mobility and ease of movement. Thus the wearer can move faster when necessary, and can perform his routin duties with less effort and more safety Here is a long-wearing abrasion-resistant, life-saving asbestos fabric that is completely flameproof, molten-metal repellent, and absolutely lint-fre This high-quality treatment is so effec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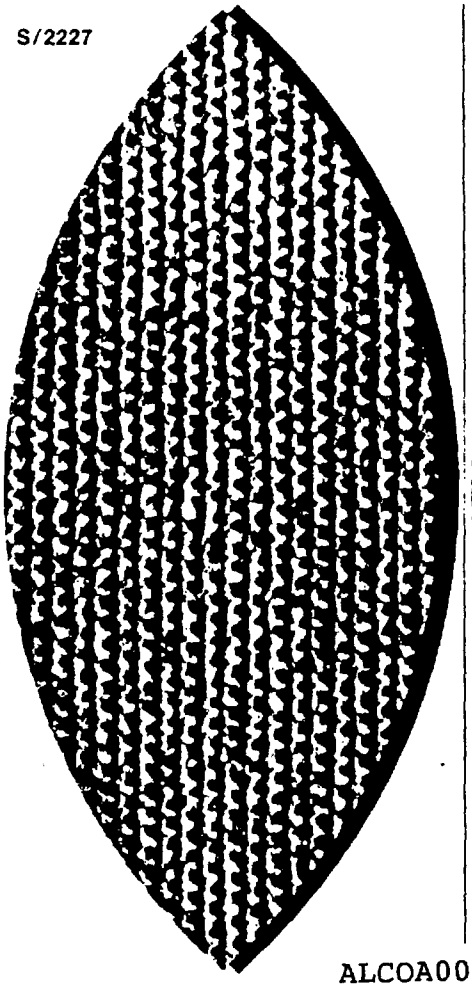
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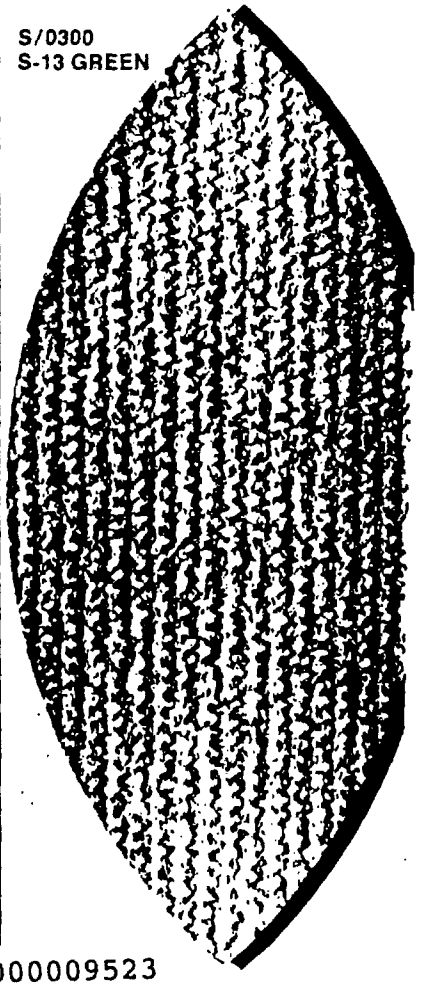
S/0300
S-13 GREEN

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tive that the coated cloth is suitable for use in "clean" rooms or anywhere that a clean, lintless atmosphere must be maintained. Molten Metal Splash Protection coating is particularly recommended for asbestos fabrics used as protective shields in "clean" areas adjacent to nuclear reactors, in computers, on submarines, adjacent to electronic or electromechanical equipment or anywhere the area must be kept free from dust and lint.

In actual competitive tests where three pours of 3000°F. molten metal were allowed to splash directly against samples of Porter Molten Metal Splash Protection cloth, and five other similar fabrics, the Porter Molten Metal Splash Protection coated cloth proved to be unharmed and free of burns, char, or even brown spots. The particular Porter asbestos cloth used in the test was one of the line developed for extremely light weight. Although the untreated cloth weighed only 1.45 pounds per square yard, the Molten Metal Splash Protection coated cloth withstood the molten "waterfall" better than the 2.5 pounds per square yard fabric which had previously been rated number one by an independent research laboratory. Other samples were badly burned or damaged beyond further use.

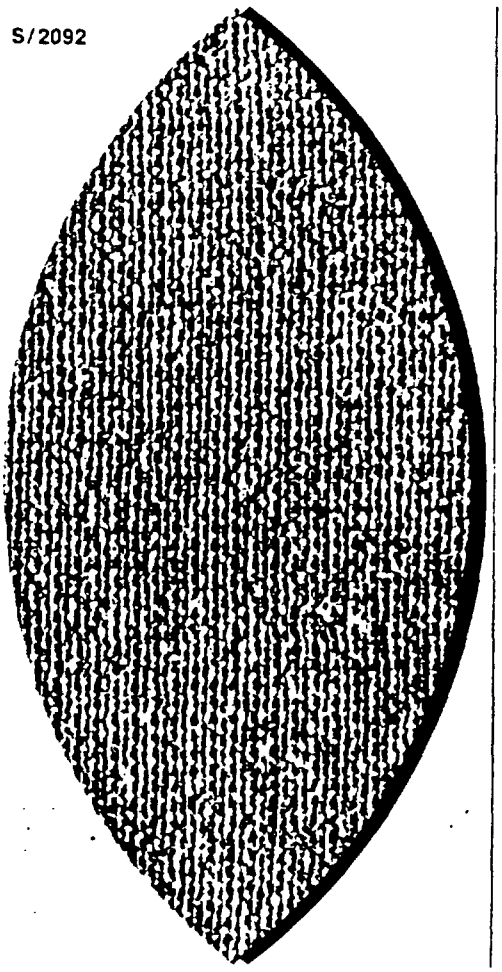
Porter Molten Metal Splash Protection asbestos cloth is available in a wide variety of weights, and with the coating on one side or both sides. The H. K. Porter Company, Inc. welcomes inquiries, and will be glad to work with customers to determine the right cloth for each particular application, and to provide samples where required for customer test and evaluation.

Molten Metal Splash Protection Cloth
FLAMEGARD Treated Coated
Asbestos Cloth
Underwriters' Grade

Style Number	Standard Widths (inches)	Approximate Weight (lbs/sq yd)
Coated 1 side		
0300	41	1.90
2225	40	2.90
2583	40	3.25
Coated 2 sides		
0300	36	2.20
	40	2.20
2225	40	3.40
2583	40	3.80
7862	58	1.30
(color green)		

Standard Color is light green, other colors and white are available. Other styles of cloth also available with this treatment.

S/2092



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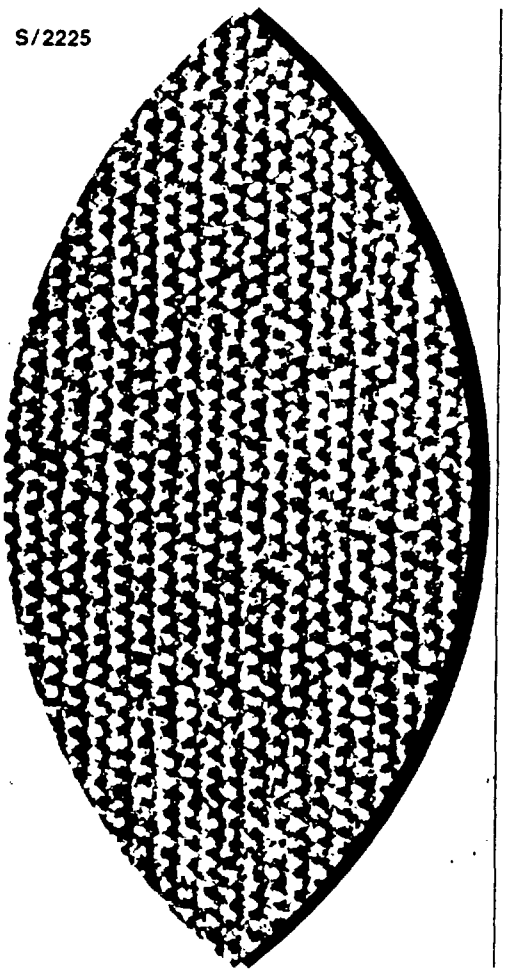

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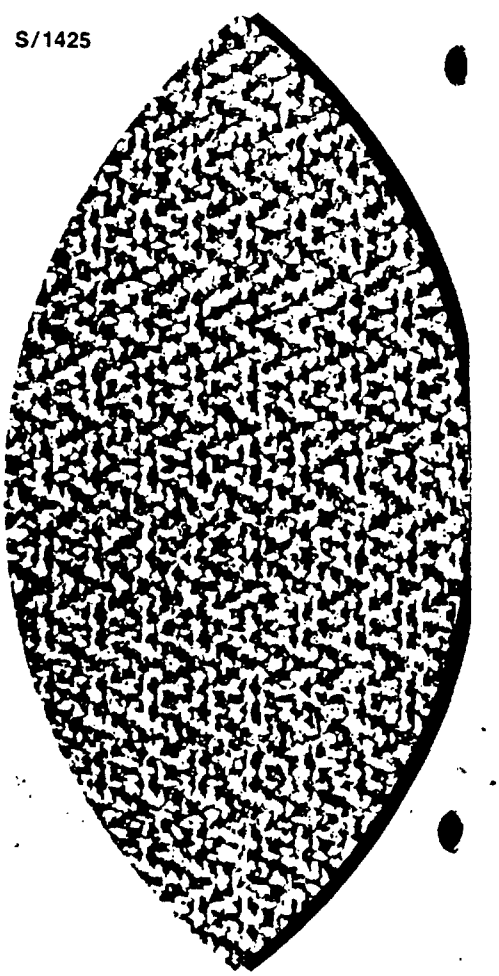

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Porter Aluminum-Coated Cloth

Porter asbestos cloth is designed primarily for use in the manufacture of protective clothing and blankets. The aluminum coating is available on either untreated fabric or on FLAMEGARD treated cloth. The insulating characteristics of high-quality asbestos cloth, combined with aluminum's ability to dissipate heat, provide a lightweight coated fabric that offers good protection at relatively low cost. The continuing efforts of Porter to improve the reliability and dependability of its products have resulted in aluminum coated cloth with an outstanding degree of flexibility and abrasion resistance.

Porter Aluminum Coated Cloth
(Underwriters' Grade)

Style Number	Approximate Weight Uncoated (lbs/sq yd)	Approximate Weight Coated (lbs/sq yd)
A-2092	.75	.86
A-2105	1.15	1.33
A-2140	1.40	1.60
A-160	1.45	1.65
A-9321	1.66	1.86
A-9322	1.90	2.09
A-1425	2.25	2.60
A-2225	2.25	2.60
A-2235	2.35	2.80
A-2250	2.50	2.90

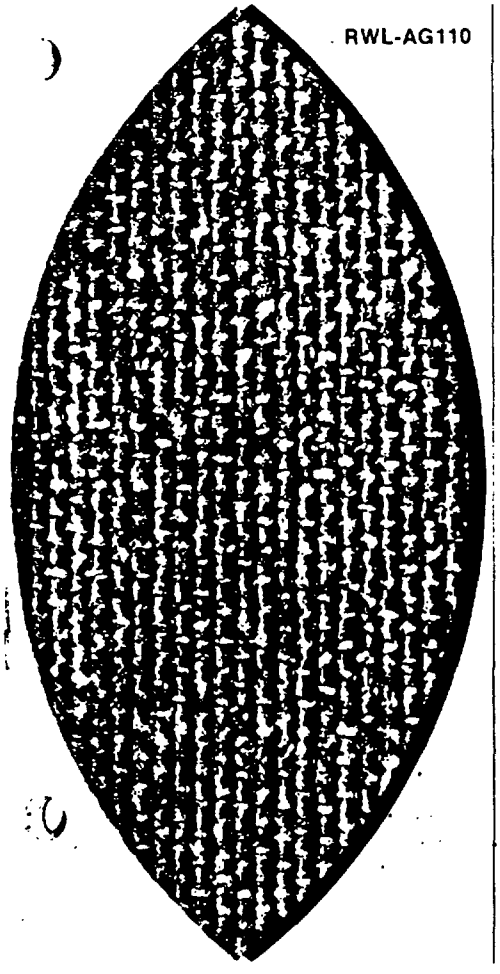
Other styles and grades are also available.

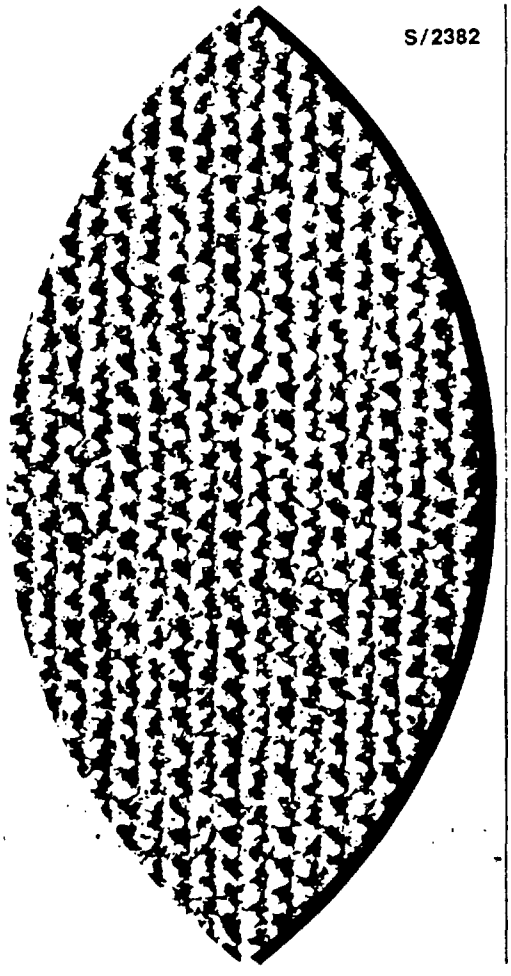
Porter Hi Luster Aluminized Cloth

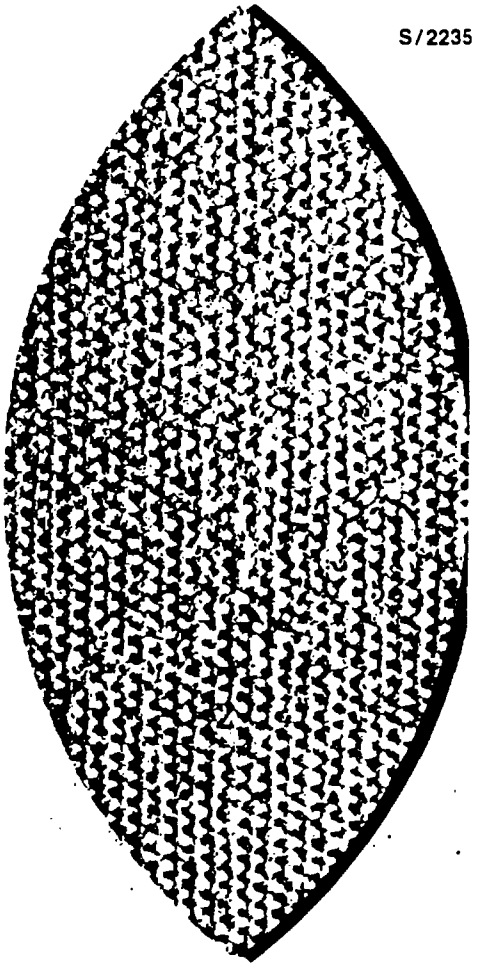
The H. K. Porter Company, Inc. has developed an asbestos-aluminum laminate that is designed for uses requiring a high degree of reflectivity. Built-in Porter quality is evidenced by the ability of this cloth to maintain its brilliance after hours of exposure to searing heat. FLAMEGARD treated HI LUSTER cloth is flameproof, extremely lightweight, and has exceptionally low heat transmission.

These outstanding characteristics together with flexibility and exceptionally easy cutting and stitching features add up to the ideal cloth for use in many types of asbestos safety apparel. Tensile strength and tear factor of this cloth are excellent.

Technology developed at Porter through a concentrated research and development program, and through many years of experience in the manufacture of asbestos products, makes possible an aluminum-to-asbestos fusion process that resists cracking and peeling even under severe conditions.







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Porter Hi Luster Aluminized Cloth

Style Number	Grade	Approximate Weight Uncoated (lbs./sq yd)
AF- 160	Underwriters'	1.45
AF-2225	Commercial Underwriters' AAA	2.25
AF-2583	Underwriters'	2.50

HI LUSTER ALUMINUM LAMINATE is also available on most other styles and grades of Porter asbestos cloth.

Asbestos Cloth for Plastic Laminating

Extra-long, nonferrous asbestos fibers, twisted into soft-spun yarns, are used in the production of Porter plastic laminating base cloth. The longer fibers used by Porter provide greater tensile strength and flexural strength in the finished laminate; and the soft-spun yarn absorbs resin easily and uniformly to provide complete saturation of the cloth. Unlike glass fabrics, Porter asbestos laminating cloth requires no chemical or heat treatment to get maximum adhesion of the resin to the fibers. Use of nonferrous asbestos makes the cloth ideal for the manufacture of reinforced plastics for use as primary or secondary electrical insulation. High tensile strength of the fabric, and its ability to become completely saturated, make this fabric excellent for use in the manufacture of products where mechanical strength and impact resistance are essential—such as thin-wall wound tubing.

Regardless of your requirements for asbestos laminating cloth, you will find that the uniformity of weave that is characteristic of Porter cloths will provide you with higher production efficiencies and more uniform—more dependable—finished products.

Consistent Dependability

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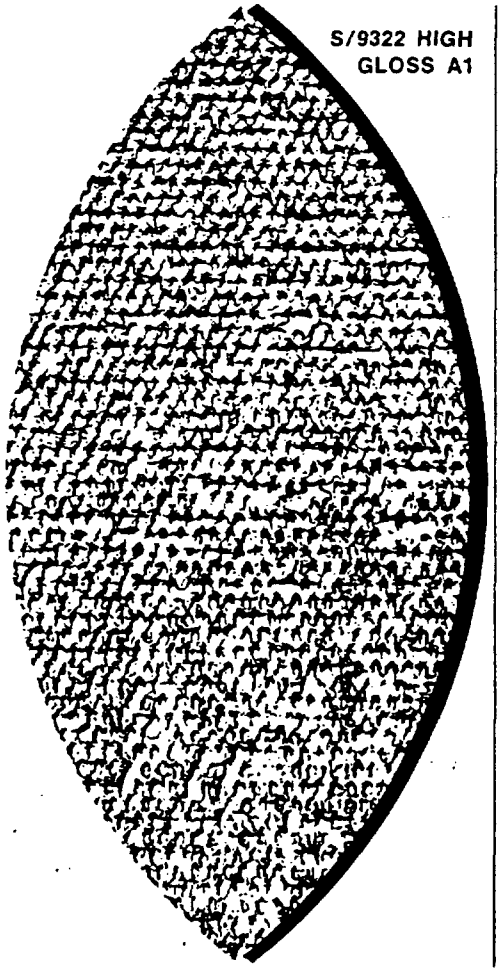

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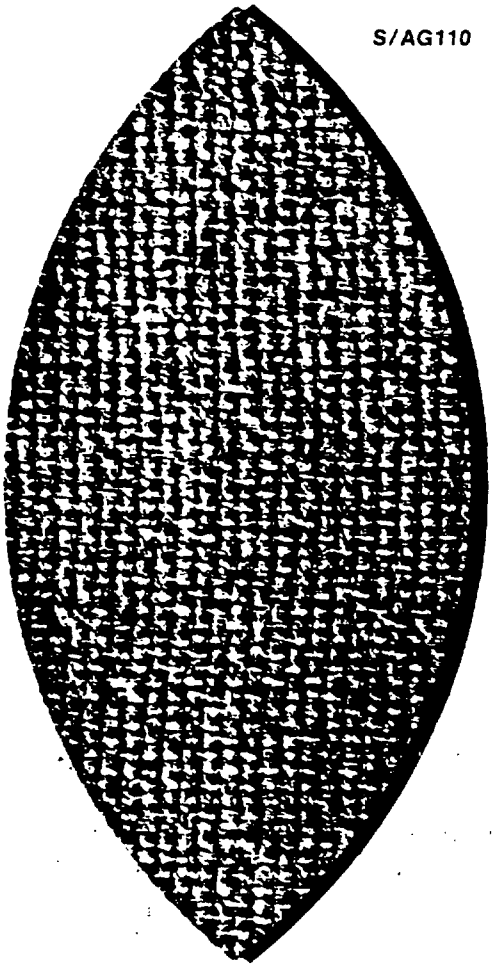

S/AG110

Weight Pounds/Sq. Yd.	Style	Gauge Inch	GRADES			
			Commercial	Underwriters	AA	AAA
PLAIN WEAVE — NO WIRE INSERTION						
.75	2092	.030		•		
.90	2090	.030		•		
1.10	AG-110	.048		•		
1.15	2105	.025		•		
1.40	2140	.050		•		•
1.40	AG-140	.052		•		
1.45	2135	.045		•		
1.45	8145	.070	•			
1.50	2150	.066	•	•		
1.65	2165	.050	•	•	•	
1.65	5612	.055		•	•	
1.75	2176	.055	•	•	•	
2.00	2200	.060	•	•	•	
2.10	2210	.060	•	•		•
2.25	2225	.065	•	•	•	•
2.25	8225	.080	•			
2.50	8250	.085	•	•		
2.50	2250	.075	•	•	•	•
4.40	2382	.120	•	•	•	•
5.50	2525	.125	•	•		•
6.00	2645	.187	•			
METALLIC ASBESTOS — WIRE INSERTION						
2.15	3215	.063	•	•	•	•
2.50	3251	.080	•	•	•	•
2.75	3270	.070	•	•	•	•
3.00	3300	.075	•	•	•	•
6.25	3625	.180	•			
2.60	3260 Nickel	.070				•
3.50	3350	.075				•
HERRINGBONE WEAVE — NO WIRE INSERTION						
2.25	1425	.065		•		
2.50	1425	.070		•		
TWILL WEAVE — NO WIRE INSERTION						
3.00	4300	.078				•
3.33	4333	.082				•

Rope

Twisted and Braided

Porter Asbestos Rope is made in two basic types. TWISTED ROPE is made by tightly twisting together two or more strands of asbestos *wick*. BRAIDED ROPE is made in three constructions: (1) by braiding one jacket of asbestos *yarn* over a core of asbestos rope or wick; (2) by braiding two successive braids of *yarn*, one over the other, to form a double-jacket braided rope; and (3) by braiding successive braids of *yarn*, one over the other, to form a solid-jacket braided rope.

Asbestos rope finds many applications where a more firm material than wick is desired. The twisted style is widely used for covering diesel engine exhaust lines, as gasketing material, and as a core for high-temperature packing. The braided style is ideal for use as groove packing for inspection doors, for filling expansion joints in furnace brickwork, for valve packing, and as gasketing material for sealing doors or water gas generators. The braid-over-braid style of rope is stronger and firmer than the other styles.

The most common grades for asbestos rope are Commercial and AAA, however Porter can furnish asbestos rope in all grades specified by the American Society for Testing Materials. Sizes range from 1/8" to 2" in diameter. Standard packaging is 10-, 25-, and 50-pound units wound in coils or on reels.

The following tables show the average weight of 100 feet of various Porter asbestos ropes, and also show the approximate number of feet per pound of Porter twisted asbestos rope.

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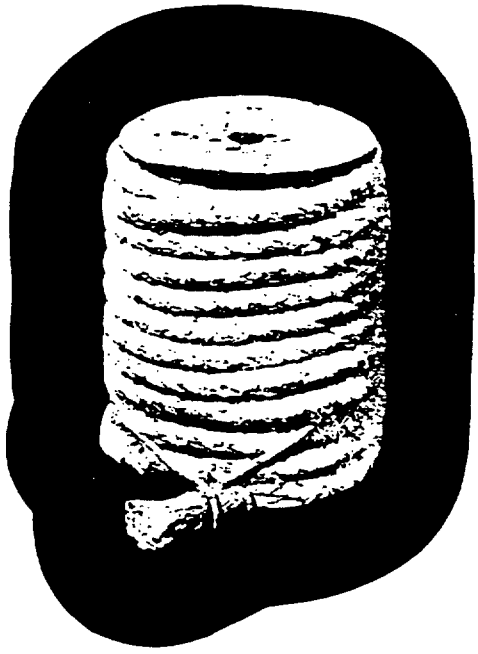
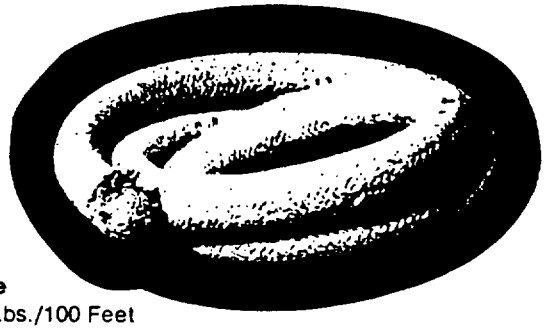


Porter Twisted Asbestos Rope Style 5617
(Commercial Grade)

Size (inches)	Average Weight (pounds/100 feet)	Approximate Feet/Pound
1/4	2.50	40.0
3/8	5.00	20.00
1/2	8.50	11.80
5/8	12.50	8.00
3/4	16.50	6.06
1	25.00	4.00
1-1/4	31.00	3.00
1-1/2	36.10	2.77
1-3/4	40.00	2.50
2	56.00	1.78

Porter Grade AAA Twisted Rope is style 7118-R



Porter Braided Asbestos Rope
(Commercial Grade) Average Weight in Lbs./100 Feet

Style	Diameter (inches)								
	3/16	5/16	1/2	3/4	1	1-1/4	1-1/2	2
661 Single Jacket	1.28	2.22	5.75	12.84	27.7		62.4	—
662 Double Jacket	—	—	9.00	17.00	30.4		66.0	72.0
663 Solid Braid	—	3.66	8.49	18.98	33.5		81.8	87.5

ALCOA0000009528

Wick



Asbestos Twisted Wick

Porter Asbestos Wick is a soft pliable strand formed by loosely twisting together several strands of soft slivers. It is generally furnished in Commerical Grade (75% up to 80% asbestos content by weight), although other grades are available on request.

Asbestos wick has many uses. In power plants, it is used as an emergency packing; plumbers find it handy for packing steam and hot water valves; roofers find it useful as a weather seal for corrugated roofing; maintenance workers use it for caulking retorts, and for sealing ovens and furnace doors. A specially designed Porter Asbestos Wick is used in the wire galvanizing and tinning processes to wipe excess metal from the wire. This same wick is used as a core for high-temperature packings.

Standard sizes of wick produced by Porter are 1/8", 1/4", 3/8", and 1/2" diameter.

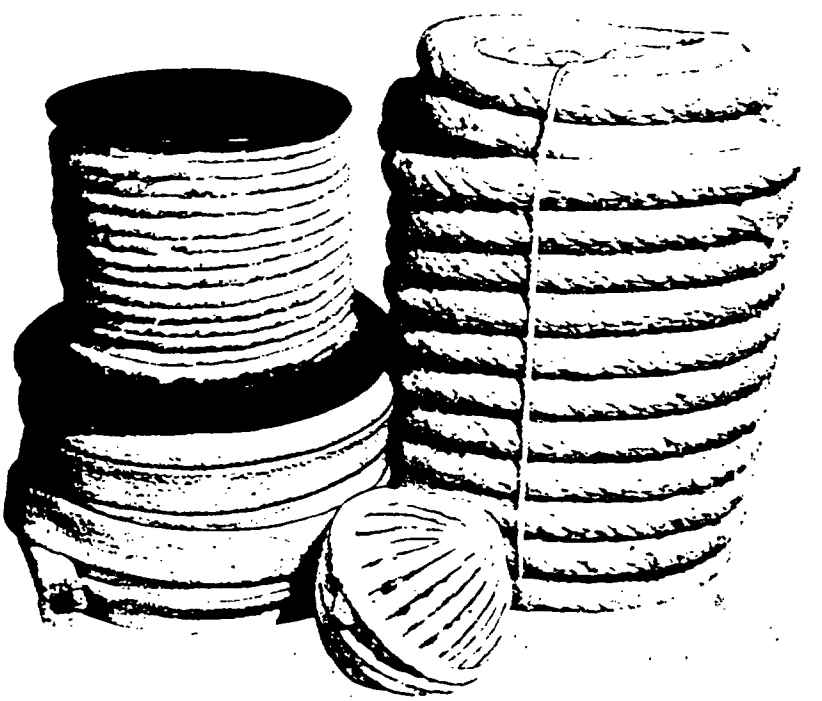
The table on the right shows the average weight of 100 feet of Porter Style 5621 Asbestos Wick in each of the four standard diameters, and also shows the approximate number of feet per pound.

Porter Style 5621 Asbestos Wick

Diameter	Average Wt. (lbs./100 ft.)	Approximate Feet/Lb.
[illegible]	.38	263.0
[illegible]	1.60	62.50
[illegible]	3.20	31.25
[illegible]	4.77	21.00

All of the asbestos textile products manufactured by the H. K. Porter Company, Inc. exhibit the same high degree of uniformity and dependability that is made possible only through years of experience. But uniformity of product depends on more than experience. Research, material evaluation, process control, and testing in the laboratory and in the field, all contribute to the reliability of Porter-asbestos products.

In the manufacture of rope, wick, and tubing, as well as other asbestos textiles, Porter uses raw materials that are specially selected to provide the most desirable physical properties in the finished product. Modern machinery, in the most up-to-date plant in the asbestos industry, then separates the fibers, cleans them, screens out the fibers that are too short, and then blends and cards only the longer fibers into the highest quality roving that is available anywhere. It is this premium-quality roving that is transformed into the sliver or the yarn used to produce all the asbestos rope, wick, and tubing manufactured by the H. K. Porter Company, Inc.



ALCOA0000009529

Asbestos

Tubing

Braided and Woven

Porter Asbestos Tubing is made to uniform diameter by carefully braiding or weaving highest quality yarns under strict quality control. Porter braided tubing is available with inside diameters ranging all the way from 1/64" up to 3"; woven tubing is produced with inside diameters from 3/4" to 22-1/2". Wall thicknesses range from approximately 1/64" to 1/8".

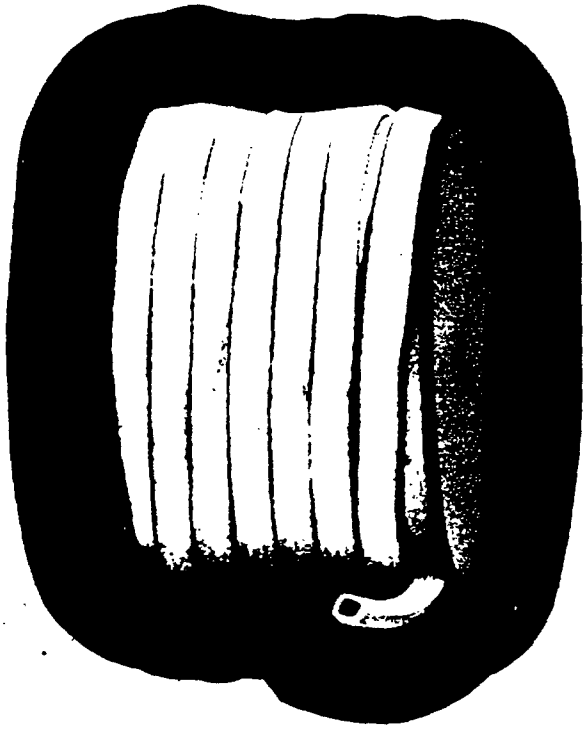
Braided asbestos tubing is particularly suited for use as sleeving over copper tubing, electrical appliance leads and cables, thermocouple leads, and other conductors, to provide fire protection, thermal insulation, and resistance to abrasion. For use in the glass industry, Porter braided asbestos tubing provides an ideal covering for tongs and pincers, since the low heat transmission of the fabric protects the hot glassware from pressure marks and other injury. Strength and flexibility provided by the use of high-quality Porter yarns, and the characteristic ability of braided tubing to be expanded or contracted to fit larger or smaller diameters, allow this tubing to slide easily over the rod, wire, or cable to be covered.

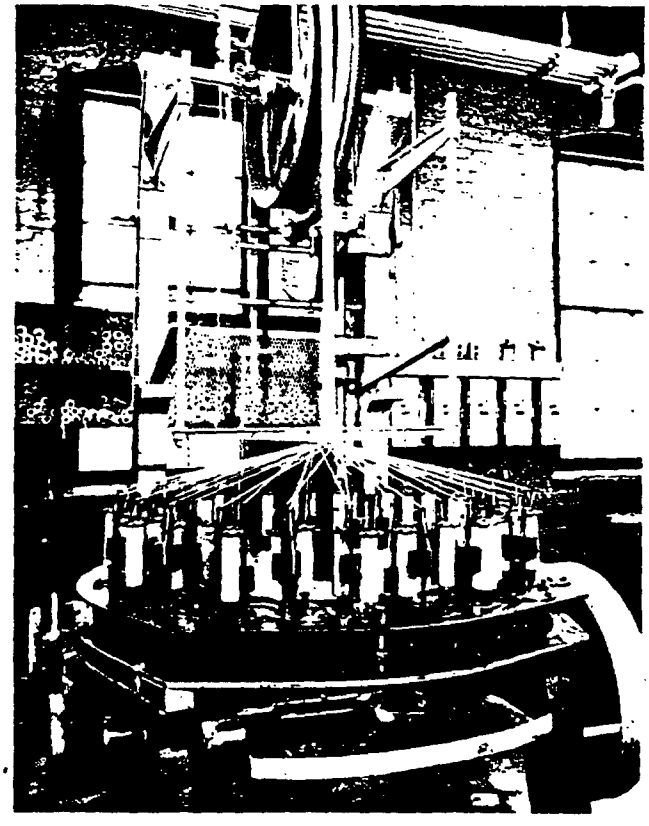
Woven style asbestos tubing is particularly suited for insulating bus bars. Woven tubing of large diameters is often formed into dust bags for filtering hot waste gases which constitute a fire or dust hazard, and for use as filters in high-temperature pneumatic systems and in other dust collecting systems.

The H. K. Porter Company, Inc. has a large staff of trained technical people available to help you select the right asbestos tubing for your particular application. Analysis of your requirements by highly qualified Porter technicians can show you how to save money by using the asbestos textile best suited to your needs.

Porter supplies standard and custom-made asbestos tubing in five grades as established by the American Society for Testing Materials: Commercial, Underwriters', AA, AAA, and AAAA. Porter asbestos tubing is available in various textures and in several wall thicknesses, it is furnished either treated or untreated, and can be constructed of plain asbestos yarn, reinforced yarn, or metallic (wire-inserted) yarn.

The following tables list the approximate feet per pound of plain braided tubing with 1/16" and 1/8" wall thicknesses and various diameters, and the flat width and approximate weight per hundred feet of woven asbestos tubing with 1/16" wall thickness and various diameters.





ALCOA0000009530

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Porter Woven Asbestos Tubing
1/16" Wall—Plain

Inside Diameter (inches)	Flat Width (inches)	Approximate Weight (pounds/100 feet)	Approximate Feet/Pound
1/2	7/8	4.20	23.80
3/4	1-1/16	5.25	19.10
1	1-11/16	7.67	13.00
1-1/4	2-1/8	9.95	10.05
1-1/2	2-1/2	11.50	8.70
1-3/4	2-7/8	13.00	7.68
2	3-1/4	14.85	6.73
2-1/4	3-11/16	16.50	6.06
2-1/2	4-1/16	18.15	5.50
2-3/4	4-7/16	19.30	5.18
3	4-13/16	21.40	4.67
3-1/4	5-1/4	23.40	4.27
3-1/2	5-5/8	24.80	4.03
3-3/4	6	27.00	3.70
4	6-3/8	28.60	3.50
4-1/4	6-13/16	30.50	3.28
4-1/2	7-3/16	32.00	3.12
4-3/4	7-9/16	33.60	2.98
5	8	35.50	2.82
5-1/4	8-3/8	37.00	2.70
5-1/2	8-3/4	38.80	2.58

Note: The "Grade" of an asbestos textile product is determined by the percentage of asbestos content by weight. The grade classifications as established by the American Society for Testing Materials are as follows:

	Asbestos Content by Weight	Approximate Temperature Limit
	75% up to but not including 80%	[illegible]°F
	80% up to but not including 85%	[illegible]°F
	85% up to but not including 90%	[illegible]°F
	90% up to but not including 95%	[illegible]°F
	95% up to but not including 99%	[illegible]°F
	99% to 100% inclusive	[illegible]°F

Porter Braided Asbestos Tubing

Inside Diameter (inches)	1/16" Wall Thickness		1/8" Wall Thickness	
	Porter Number	Approximate Feet/Pound	Porter Number	Approximate Feet/Pound
1/16	16116	[illegible]	18116	—
1/32	16332	[illegible]	18332	—
1/8	1618	[illegible]	1818	41.3
3/32	16532	[illegible]	18532	—
5/16	16316	[illegible]	18316	—
1/4	1614	[illegible]	1814	19.73
7/32	16932	[illegible]	18932	—
9/16	16516	[illegible]	18516	—
5/8	1638	[illegible]	1838	16.0
11/16	16716	[illegible]	18716	—
1/2	1612	[illegible]	1812	—
13/16	16916	[illegible]	18916	12.01
5/8	1658	[illegible]	1858	11.72
3/4	1634	[illegible]	1834	9.0
7/8	1678	[illegible]	1878	7.7
15/16	161516	[illegible]	181516	7.0
1	161	[illegible]	181	6.67
1 1/8	16118	[illegible]	18118	6.46
1 1/4	16114	[illegible]	18114	7.45
1 3/8	16138	[illegible]	18138	4.86
1 1/2	16112	[illegible]	18112	4.50
1 3/4	16134	[illegible]	18134	4.24
1 13/16	1611316	[illegible]	1811316	—
1 7/8	16178	[illegible]	18178	—
2	162	[illegible]	182	2.94
2 1/16	16212	[illegible]	18212	2.96
2 1/4	163	[illegible]	183	2.38

ALCOA0000009531

Asbestos

Conveyor Belting

Trouble-Free Asbestos Conveyor Belting

Asbestos conveyor belting produced by the H. K. Porter Company, Inc. is made of the highest quality asbestos fibers.

The ability to select only the best fibers for a particular use, and then to card, blend, and process them into extremely uniform textiles, makes Porter a leader in producing the most dependable asbestos products you can buy. Constant control of quality, from raw materials to finished products—continual testing, in the laboratory as well as in the field—never-ending research and development—all add up to asbestos products that offer greater economy through greater dependability.

Porter asbestos conveyor belting has many advantages to offer. This belting is solid woven yet remains flexible. It is strong and durable, and is designed for high temperature use. All Porter asbestos conveyor belting is made with selvage edges, and can be made endless by using any standard belt lacing such as the alligator type. Edges won't curl. Stretch and traction problems are minimized, and downtime for tensioning and adjusting is practically eliminated.

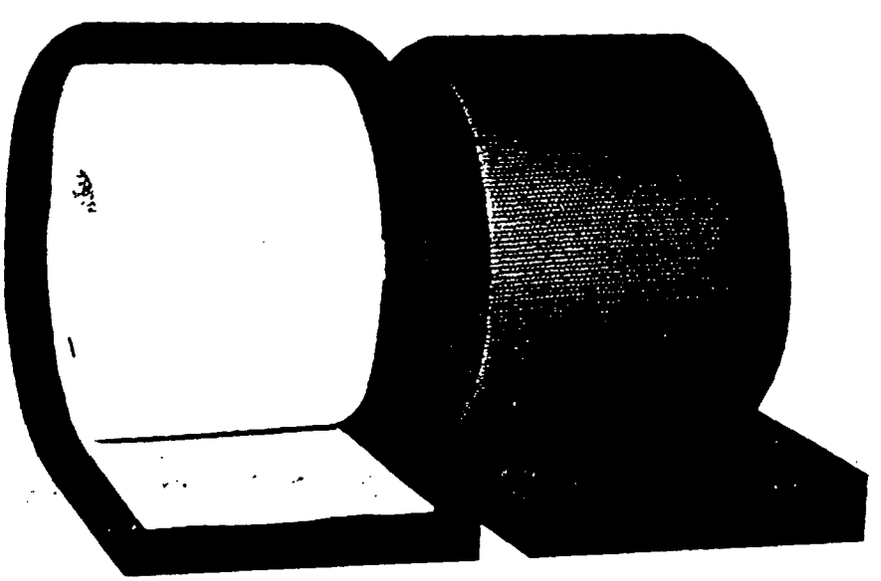
Porter makes two basic styles of conveyor belting. Both styles are woven of Grade AA asbestos yarn of the finest quality. Style 1030 is made of plain asbestos yarn throughout; Style 2844 is constructed with the carrying surface composed of plain asbestos yarn, and the underside (pulley side) composed of a wire-inserted asbestos yarn. Use of wire-inserted yarn increases the tensile strength and abrasion resistance of the belting, and provides better traction.

For even greater durability and higher temperature resistance, Porter can supply either style of belting with a specially formulated treatment that also makes the belting lint-free.

Porter asbestos conveyor belts are especially recommended for the glass industry, because less heat is drawn from the bottom of a glass container when it contacts a belt made of woven asbestos. Production of prime glass products is increased, and operating costs are lowered because of fewer rejects due to checking.

Other uses for Porter belting include chute liners, hand pads, cup liners, and gaskets.

Porter asbestos conveyor belting may be easily cut into any desired shape. It is made in widths from 3/4" to 36". Standard roll length is 100 feet, and the standard thickness is 1/4"; however, 3/16" and 1/8" belting are also available. The following tables show the weights of some of the standard conveyor materials manufactured by the H. K. Porter Company, Inc.



Porter Type #2844 Grade AA Asbestos Conveyor Belting (¼" Thick)
Wire Reinforced on Pulley Side

Width (Inches)	Approx. Wt. (lbs./100 feet)
¾	13
1	17
1½	25
1¾	29
2	34
2½	43
3	52
3½	56
4	59
5	68
6	76
8	91
10	106
12	120
14	134
15	148
16	172
18	178
20	194
22	201
24	209
26	225
28	236
30	268
32	297
34	327
36	357
38	387
40	417
42	432
44	447
46	462
48	477
50	492
52	507
54	522
56	537

Porter Type #1030 Grade AA Asbestos Conveyor Belting (¼" Thick)
No Wire Reinforcement

Width (Inches)	Approx. Wt. (lbs./100 feet)
6	13.0
8	21.0
10	25.0
12	28.3
14	35.0
16	41.0
20	56.0
24	70.0
28	84.0

ALCOA0000009532

Tapes

Although Porter maintains a large inventory of tapes of standard construction, special modifications can be designed and manufactured to meet the specific needs of the user. Porter specializes in the production of custom-made tapes and other asbestos products, and has a large technical staff available to help you with your insulation problems.

Plain Asbestos Tapes

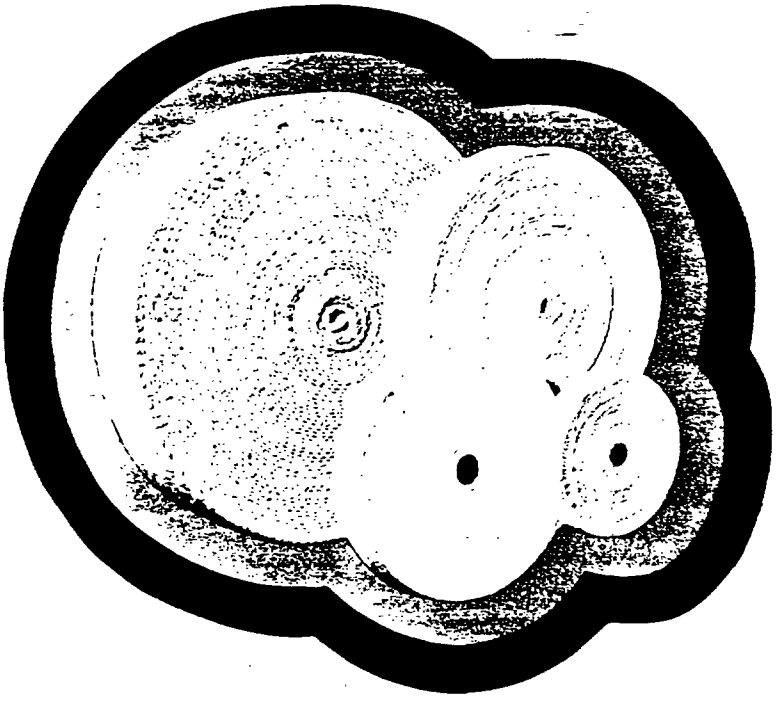
Flameproof, flexible Porter listing tapes are recommended especially for armatures, electrical wires and cables, hot steam pipes, switchboard leads, bus bars, underground cables, and numerous other uses.

Heavy plain asbestos tapes are widely used as durable flameproof wrapping for lead-sheathed cables, as insulation for pipe hangers, as safety protection for covering hot piping, as stress-relieving pads in welding operations, and as a component in packings and gaskets. When specially treated, these Porter tapes provide such advantages as arc-proofing and resistance to oil, water, and corrosion; they can also be produced to withstand the destructive action of thermomechanical forces for other applications. Thicknesses available: 1/32" and up.

Porter asbestos tapes as made for the electrical industry are furnished in three types, classified on the basis of magnetic-rating determinations which serve to identify performance limits. These electrical tapes are nonmetallic, and have an asbestos content by weight of 80% up to but not including 85%, to conform to ASTM Underwriters' grade specifications.

General Information Concerning Porter Asbestos Tapes

There are two main types of asbestos tape—plain and metallic. Where the tape acts as an electrical insulator, and for other special electrical applications, nonmetallic (plain) tape is used. Metallic tape has greater abrasion resistance, tensile strength, and stability than plain tape and is generally used where these characteristics are desirable.



Type 2 (Magnetic Rating 0.75 maximum) is intended only for special applications where the asbestos itself is of primary importance as electrical insulation used on magnet wire, and when used primarily as a dielectric.

Type 4 (Magnetic Rating 2.00 maximum) is intended for use where the asbestos is of secondary importance as electrical insulation, and where it is applied in combination with other materials of comparably higher dielectric strength.

Type 6 (Magnetic Rating 4.00 maximum) is intended for use where the asbestos is of minor importance as a dielectric, such as in the construction of filler or heat- and flame-resistant walls of electric cables.

Porter Plain Asbestos Tape

All Grades

Average Weight (lbs.) Per Standard Roll — 100 feet long

Width (Inches)	Style and Thickness					
	#132 1/32"	#260 1/16"	#180 1/8"	#362 3/16"	#316 3/16"	#140 1/4"
1/2	.86	1.50	3.70	....	....	....
3/4	1.24	2.00	5.00	....	....	....
1	1.60	2.55	6.50	6.89	8.30	12.00
1 1/4	1.95	3.30	8.00	8.87	10.30	15.00
1 1/2	2.30	3.90	9.50	10.83	12.40	18.00
2	3.02	5.00	12.00	13.78	16.60	24.00
2 1/2	3.76	6.00	14.00	16.70	20.80	30.00
3	4.40	7.54	18.00	20.66	25.00	36.00
3 1/2	....	8.00	21.00	23.60	29.00	42.00
4	....	9.00	23.80	26.55	33.10	48.00
4 1/2	....	10.00	26.80	29.50	37.20	54.00
5	....	11.00	29.50	32.45	41.40	60.00
6	....	13.00	32.30	35.40	45.50	66.00
7	....	15.00	35.00	38.50	49.60	72.00

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Metallic Asbestos Tapes

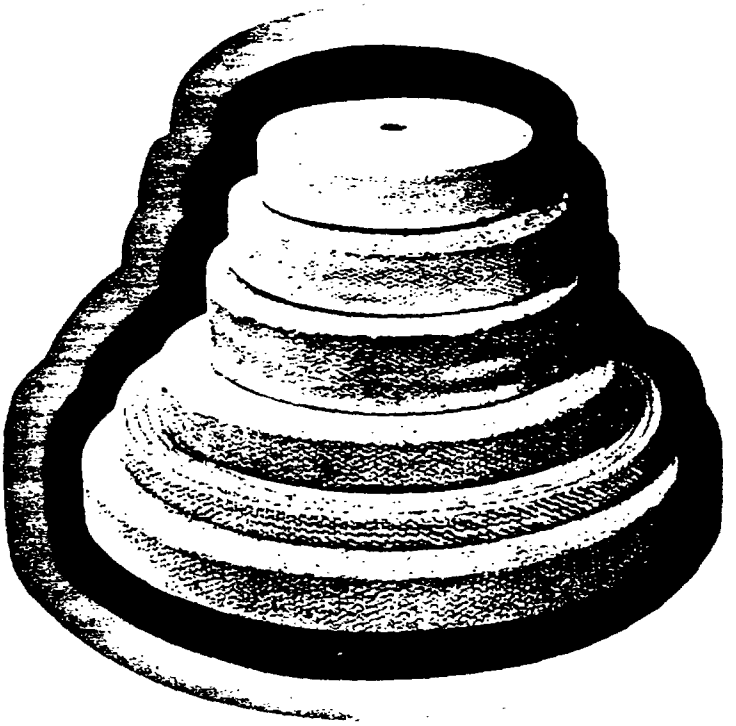
Porter metallic (wire-inserted) tapes are designed for service requiring higher tensile strength than is possible with plain tapes, or for service requiring a high coefficient of friction or extreme abrasion resistance. These tapes are woven with special alloy wires for applications where excessively high temperatures are encountered, such as in brake linings and clutch facings, and as oil burner wicking.

Thicknesses

Nonmetallic asbestos tape is available in thicknesses from 0.010 to 1/4", and the metallic (wire-inserted) tape is woven from 1/16" to 1/4" thick. Greater thicknesses are available for industrial and special applications.

Widths

Porter asbestos tapes are available in widths ranging from 1/2" to 10".



Porter Metallic Asbestos Tape

All Grades

Width (Inches)	Style and Thickness			
	#161 1/16"	[illegible]	#3161 3/16"	#141 1/4"
[illegible]	1.52	[illegible]	.....	.....
[illegible]	2.16	[illegible]	.....	.....
[illegible]	3.02	[illegible]	10.00	[illegible]10
[illegible]	3.68	[illegible]	12.50	[illegible]50
[illegible]	4.50	[illegible]	15.30	[illegible]20
[illegible]	5.83	[illegible]	20.60	[illegible]30
[illegible]	7.34	[illegible]	25.20	[illegible]40
[illegible]	8.84	[illegible]	30.30	[illegible]60
[illegible]	10.55	[illegible]	35.30	[illegible]00
[illegible]	12.10	[illegible]	40.40	[illegible]20
[illegible]	13.60	[illegible]	45.50	[illegible]50
[illegible]	15.10	[illegible]	50.50	[illegible]40
[illegible]	16.58	[illegible]	55.50	[illegible]40
[illegible]	18.15	[illegible]	60.60	[illegible]

Average Weight (lbs.) Per Standard Roll — 100 feet long

Special-Purpose Asbestos Tapes

Oil Burner Wicking

Proper vaporization of fuel, and quick lighting are two valuable assets found in asbestos wicks produced by Porter. Different types of oil burner wicking are available to provide the most efficient operation of the various gravity-flow oil burners manufactured. High-quality asbestos yarns are uniformly woven to time-tested specifications to produce wicks that give excellent service, for a long time, under high heat conditions.

Porter Asbestos Woven Metallic Oil Burner Wicking

(Commercial Grade)

	Style and Thickness		
	#249 1/16"	[illegible]	#6221 1/16"
[illegible]	1.90	[illegible]	2.12
[illegible]	2.17	[illegible]	2.42
[illegible]	2.72	[illegible]	3.02
[illegible]	2.98	[illegible]	3.33
[illegible]	3.26	[illegible]	3.63

Average Weight (lbs.) Per Standard Roll — 100 feet long

ALCOA0000009534

Asbestos Cloth To

Military Specifications

Complete Line of Asbestos Cloth Conforming to Military Specifications

In the manufacture of asbestos products, the H. K. Porter Company, Inc. carefully processes highest quality raw materials to provide each finished product with an outstanding degree of uniformity and dependability. Asbestos cloth manufactured to conform to Military Specifications is no exception. At the H. K. Porter Company, Inc. plant (the most modern in the asbestos business), excellent research, development, and manufacturing facilities, combined with rigorous quality control procedures, result in Military Specification cloths, thread, and tape that are known for their uniformity, reliability, and longer life. And Porter can deliver these asbestos products faster than any other manufacturer.

Porter can provide you with asbestos products that not only meet but exceed appropriate Military Specifications. Listed here are a few of the most commonly used textiles, and a description of their intended applications. Although the specifications were developed as military standards, the same standards are often used by power utility companies and industrial plants, as well as by the Maritime Commission.

Portersite Amosite Asbestos Felt

Conforming to Military Specification MIL-I-15091c (dated July 3, 1962)

PORTERSITE felt uses only high-quality, long-fiber amosite asbestos which has been well opened and cleaned.

The high insulating efficiency of PORTERSITE is a result of the care taken to card the asbestos to extremely fine fibers, and then to produce from them a low-density, soft, fluffy roving. The finished PORTERSITE is lightweight—but tough enough to withstand walking on it, yet resilient enough not to pack. Its outstanding resistance to vibration makes Porter amosite felt ideally suited for use as insulation over turbines and over flexible exhaust piping.

PORTERSITE felt can be furnished in two basic constructions: (1) the conventional *woven* felt which combines the amosite roving and high-grade crysotile asbestos yarns to form a lightweight, efficient insulating material; (2) a new *knitted* construction developed by Porter. The knitted method produces insulating felt that not only exhibits all the advantages of the woven PORTERSITE, but is even more uniform and well filled than the woven felt. Both constructions conform to Military Specification Mil-I-15091c.

Each of the two basic constructions of PORTERSITE is available in two types: Type A for high-temperature applications, and Type B for low temperatures.

Type A PORTERSITE has a minimum of 95% asbestos content, and is designed and processed for use in insulating surfaces that reach temperatures as high as 850°F. Its light weight and flexibility make PORTERSITE easy to apply to piping, valves and fittings, boilers, steam turbines, boiler feed pumps, etc.

Type B PORTERSITE has a minimum of 90% asbestos content, and is designed and processed for use in insulating cold surfaces. Typical applications include cold piping, valves and fittings, and other cold applications where condensation is a factor.

Both types of PORTERSITE are available in 3/4", 1", 1-1/2" and 2" thicknesses, in widths from 3" to 60".

Porter Glass Felts

Conforming to Military Specification MIL-I-16411c

For temperatures up to 1200°F, Porter has available two types of felted glass fiber insulation materials. Type I is composed of felted rovings of glass fiber, woven together with wire inserted asbestos yarn. Type II is composed of staple glass fibers felted together without use of binders.

These glass felts have excellent resistance to vibration, and will not sag or settle even under extreme conditions of vibration. The stability exhibited by these materials makes them ideal for insulating high-temperature machinery and equipment such as steam turbines, boilers, boiler feed pumps, steam lines, etc.

Standard thicknesses and their approximate weights are shown in the tables below.

Type 1

Nominal Thicknesses (inches)	¾ 1 1½ 2
Nominal Weight (lb/sq yd)	5.1 6.7 10.1 13.5

Type 2

Nominal Thickness (inch)	½
Nominal Weight (inch)	2.8

Consistent Dependability

PORTER

the Key to Quality

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Porter Asbestos Lagging Cloth, Thread, and Tape

Conforming to Federal Specification SS-C-00466e (dated July 2, 1964)

The table below describes Porter standard lagging cloths and tapes, and lists their intended uses as established by Federal Specifications. Engineering consultation and design services are available for special insulating requirements, or to help you with your "standard" applications.

Classification Grade	Intended Use	Weight (lb/sq yd)	Porter Style Number
Cloth (85% asbestos, blue stripe)	This cloth and tape is intended for use as the jacketing material over insulation where the temperature of the insulated surface is more than 125°F (52°C), except that they are not to be used on fittings and flanges, nor where they will be in contact with heated metal.	2.25 1.40 .75 1.05 1.10 1.40	2225 2140 2092 2104 AG-110 AG-140
"U.G." Tape (80% asbestos)			160
AA Cloth (90% asbestos, blue stripe)	Grade AA cloth is intended for use as the outside surface on removable and replaceable covers for flanges and fittings where the temperature of the insulated surface does not exceed 500°F (260°C) or for the wrapping of exhaust pipes where the temperature of the metal in contact does not exceed 500°F (260°C).	2.25	2225
AAA Cloth (85% asbestos, green stripe)	Grade AAA cloth is intended for use as the outside surface on removable and replaceable covers for flanges and fittings where the temperature of the insulated surface is more than 500°F (260°C), or for the wrapping of exhaust pipes where the temperature of the metal in contact exceeds 500°F (260°C).	2.25 1.40	2225 2140
AAA-M Cloth (85% asbestos, wire inserted, green stripe)	Grade AAA-M cloth is intended for use as the inside surface on removable and replaceable covers for flanges and fittings, or for the wrapping of engine exhaust pipes where the temperature of the metal in contact is over 500°F (260°C) but not exceeding 1000°F (538°C).	2.60 2.75 3.50	3260-M 3275-M 3350-M
Cotton Thread	Sewing.	198 yd/lb	1011/3 Ply
Glass Thread	Sewing.	475 yd/lb	1020

PORTER **THERMOID DIVISION**
H. K. PORTER COMPANY, INC.

ADDITIONAL INFORMATION

For product and application information, call or write H. K. Porter Company, Inc., Thermoid Division, Charlotte, North Carolina 28201.

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