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Mechanical Packings

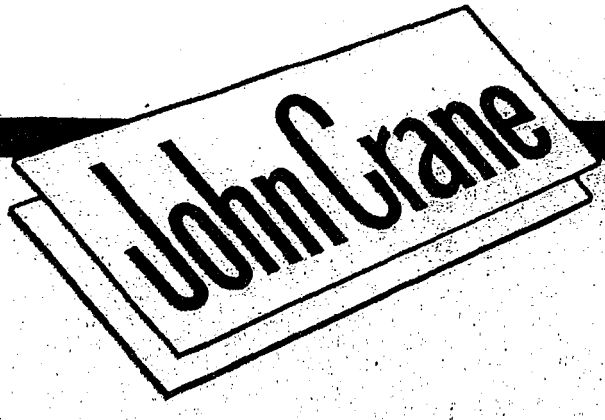
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WILLIAM LUND

John Crane

SHAFT SEALS
MECHANICAL PACKINGS
FLUOROCARBON PRODUCTS
LAPPING MACHINES
SEALERS AND LUBRICANTS

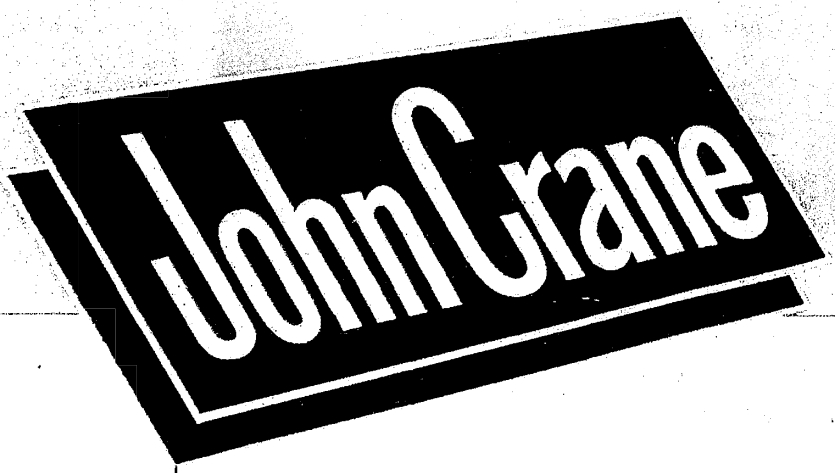
Area Code 213
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ENGINEERED SEALING PRODUCTS FOR INDUSTRY

CRANE PACKING COMPANY
MORTON GROVE, ILLINOIS 60053, U.S.A.

CATALOG NO. 60 R-15



Engineered Sealing

The John Crane Trademark Is Registered In Principal Countries Throughout The World

Metallic Fabric and Plastic Packings...

Mechanical Seals

John Crane

CRANE PACKING COMPANY

6400 OAKTON STREET, MORTON GROVE, ILLINOIS 60053

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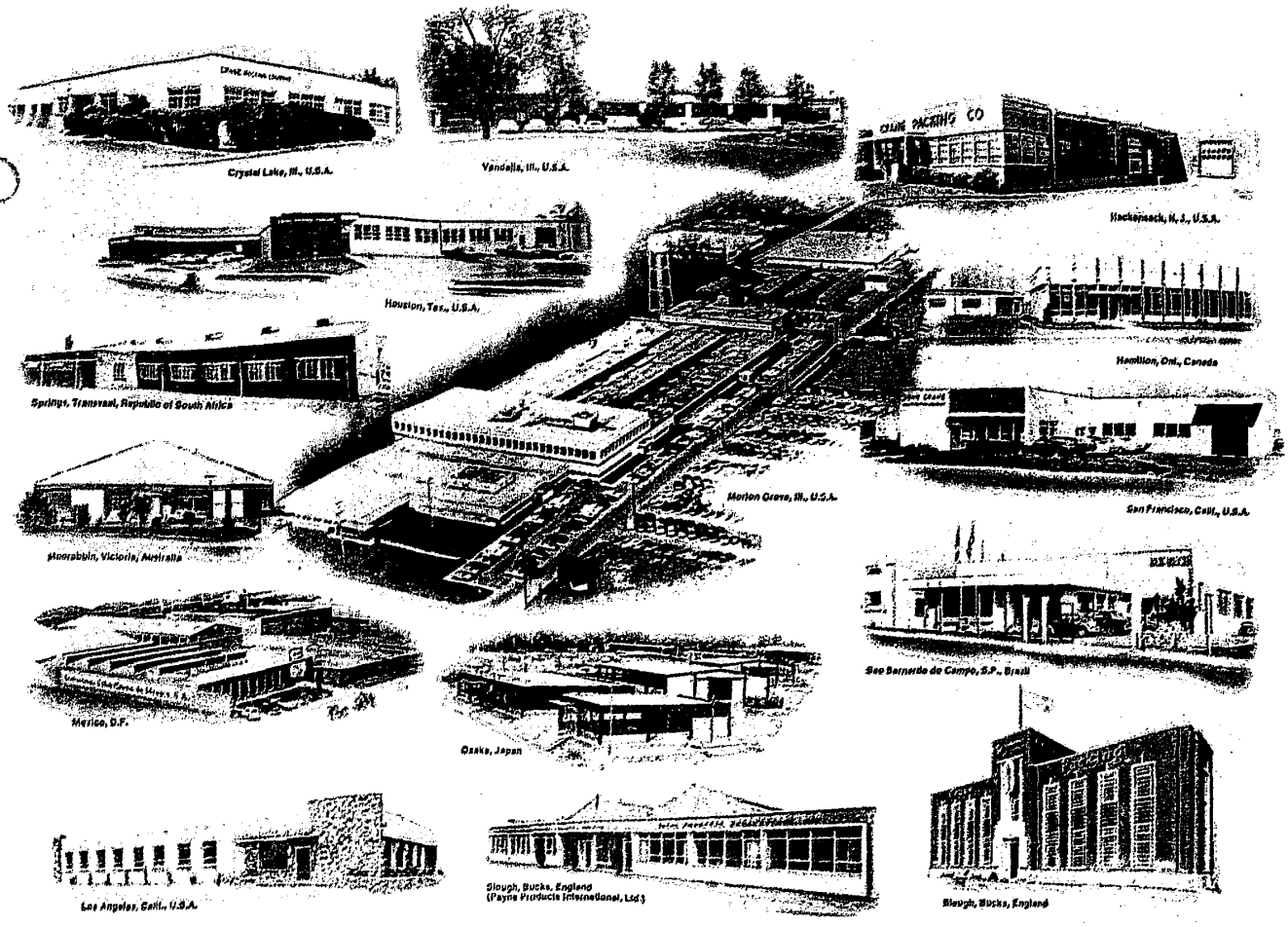
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New South Wales, Australia

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In Japan

JOHN CRANE JAPAN, INC.,
No. 28 Tsuboya, Cho 2-Chome Kita-Ku, Osaka 530
Japan



Warranty

Crane Packing Company guarantees that any product of its manufacture, which upon examination is found by a Crane representative to be defective either in workmanship or material whereby it is not suitable under proper usage and service for the purpose for which designed, will be replaced free of charge including transportation charges but not cost of installation, or at our option the purchase price will be refunded.

Our written consent must be obtained before goods may be returned, otherwise no credit and shipping charges will be allowed. This shall be Crane's maximum liability. The sale of Crane products under any other warranty or guarantee, expressed or implied, is not authorized by the Company.

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The Easy Way To The Right Packing

When you order and install RITE-PAK, you know you're right. Recommended types of equipment plus service and operating conditions are fully spelled out on the box label: fluids, shaft speeds, temperature range and pH Factor.

You get the packing that will give maximum sealing efficiency and service life.

There's No Question About Materials And Construction

A detailed description is provided: TFE, asbestos impregnated or lubricated with TFE, AAAA asbestos, type of yarn and type of braid plus other such details important to your operation.

You Get What You Order — 1 or 5-Lb. Spool

No calculating or educated guessing—you order and get a 1 or 5-lb. spool. The exact length and diameter are also clearly identified.

Large Print Labels On Easy-To-Store Boxes

You, your distributor or stock clerk can easily identify RITE-PAK right from the shelf: by style number, service, material, size and weight.

Available For A Full Range Of Services

No matter if you are confronted with one of a wide variety of services and operating conditions, there is or will be RITE-PAK for the particular application.

You're always right with Rite-Pak

See inside for service recommendations and style numbers.

John Crane Rite-Pak

Service Recommendations...

SERVICES	
CHEMICAL PLANTS	704 706 1625GF C-1030 C-1040 C-1045 C-1050
FOOD PLANTS	1625GF C-06 C-60 C-58 C-1030 C-1045
MARINE	187-I 810 C-60 C-1045 SS 6AM
PAPER MILLS	187-I 5810 C-06 C-60 C-58 C-1045 C-1050
REFINERIES	177AI 187-I 804D 810 1625GF 5810 C-1045 C-1050
UTILITIES	177AI 187-I 1625GF C-06 C-94 SS 6AM
GENERAL	187-I 804D 810 5810 C-06 C-12 C-60

STYLE 177AI

Valve stems, rods and expansion joints. For steam, air, water, mineral oil and liquified petroleum service. Withstands temperatures up to 1200°F. pH Factor: 4-8.

Material: Braided of high quality wire inserted asbestos over a loose core of graphite and asbestos.

STYLE 187-I

Stainless steel valve stems, rods and expansion joints. For steam, air, water, mineral oil and liquified petroleum service. Withstands temperatures to 1200°F. pH Factor: 4-8.

Material: Braided of high quality wire inserted asbestos over a loose core of graphite, asbestos fibers and corrosion inhibitor.

STYLE 704

For valve stems or low shaft speed applications up to 1000 FPM. Highly corrosive services such as caustic alkali solutions, chlorine liquids and acids where any type of lubricant is undesirable. Temperature range: —100° to +500°F. pH Factor: 1-12.

Material: Braided of pure TFE tape, interlaced construction. No lubricant.

STYLE 706

For medium shaft speed applications up to 1500 FPM. Highly corrosive services such as caustic alkali solutions and fluorine-containing acids where a lubricant can be tolerated. Temperature range: 0° to +300°F. pH Factor: 11, 12, 13.

Material: Braided of pure TFE tape. Interlaced construction. Impregnated throughout with a special chemical resistant lubricant.

STYLE 710

Valve stem or medium shaft speed applications up to 1500 FPM. Nitrating acid and oleum services. Temperature range: 0° to +125°F. pH Factor: 2-10.

Material: Braided of pure TFE tape. Interlaced construction. Impregnated throughout with a special lubricant.

STYLE 712

For rotary shaft equipment in medium speed applications to 1500 FPM. Highly corrosive services such as caustic alkali solutions and fluorine-containing acids. Temperature range: —40°F to +400°F. pH Factor: 11, 12, 13.

Material: Braided of pure TFE tape. Interlaced construction. Lubricated with a non-hardening, non-melting lubricant.

STYLE 804

Valves or reciprocal pump piston rods. For steam, air, gas and mild chemicals. Withstands temperatures to 550°F. pH Factor: 4-8.

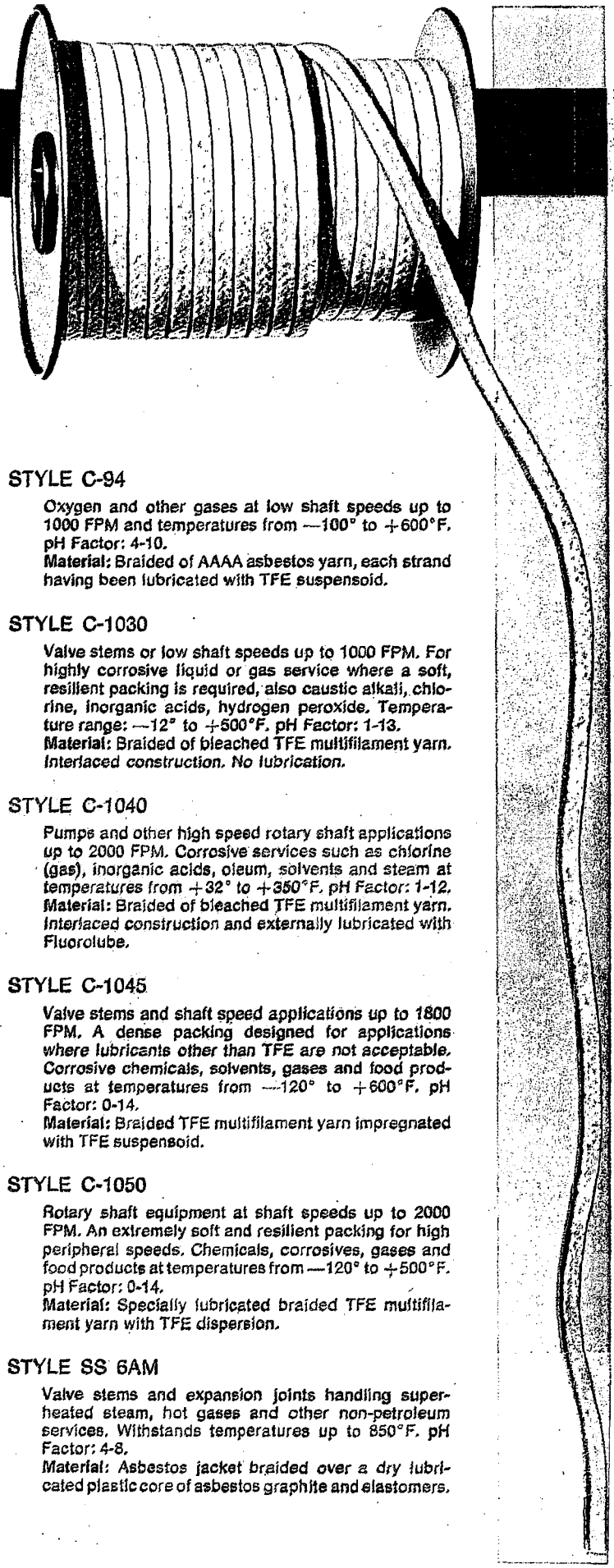
Material: Braided of long-fiber Canadian asbestos yarn each strand impregnated with a heat resistant lubricant and graphite. Braid-over-braid construction.

STYLE 804D

Hot oil and gasoline pumps, refinery control valves and similar services where an oil-proof packing is required. Withstands temperatures to 750°F. pH Factor: 4-8.

Material: Long-fiber Canadian asbestos yarn, each strand treated with a synthetic oil-proof binder and impregnated with dry graphite. Braid-over-braid construction.

..By Style Numbers



STYLE 804M

Rotary shafts, valve stems and expansion joints handling high pressure steam, air, gas, cresylic acid and other chemicals. Withstands temperatures to 750°F. pH Factor: 3-9.
Material: Braid-over-braid, wire-inserted, white asbestos packing impregnated with a special heat resistant lubricant to produce an extremely resilient packing.

STYLE 810

Centrifugal or rotary pumps at shaft speeds up to 1800 FPM. For hot or cold water, cold oils, mild caustics, acids and most standard services. Withstands temperatures to 500°F. pH Factor: 6-8.
Material: Square braided from the finest Canadian asbestos with a high flash point lubricant and graphite.

STYLE 1625GF

Severe service packing. All types of equipment at shaft speeds up to 2500 FPM. For the most difficult fluid handling applications in the chemical, petrochemical and related industries. Impervious to most acids, corrosives, alkalis and caustic solutions. Withstands temperatures up to 1000°F. pH Factor: 0-14.
Material: Interlace braided from a special graphite filament yarn to produce a self-lubricating packing with high heat dissipation.

STYLE 5810

Rotary shafts on pumps, agitators, mixers at shaft speeds up to 1800 FPM, also valve stems. For hot and cold water, brine, oils, mild caustics, solvents, mild acids and many general chemicals. Withstands temperatures to 500°F. pH Factor: 6-8.
Material: Interlace braided of the finest Canadian asbestos thoroughly impregnated with a special high flash point lubricant and graphite.

STYLE C-06

Valve stems or low shaft speed applications up to 1000 FPM. A dense packing that prevents permeation of gases or vapors. Corrosive chemicals, solvents, gases and food products at temperatures from —100° to +600°F. pH Factor: 2-10.
Material: Braided white asbestos yarn impregnated with TFE suspensoid.

STYLE C-12

A soft, resilient packing for low shaft speed applications up to 1000 FPM. Steam, aqueous solutions, solvents, food services, etc. Temperature range: —100°F. to +600°F. pH Factor: 3-6.
Material: Braided dry, white asbestos yarn externally lubricated with TFE suspensoid.

STYLE C-60

Valve stems or medium shaft speed applications up to 1500 FPM. A dense and resilient packing designed for paper mill applications. Also for chemicals, corrosives, gases and food products at temperatures from —100° to +600°F. pH Factor: 2-10.
Material: Braided white asbestos yarn impregnated with TFE suspensoid and a special lubricant.

STYLE C-58

Same as style C-60 but braid-over-braid construction.

STYLE C-94

Oxygen and other gases at low shaft speeds up to 1000 FPM and temperatures from —100° to +600°F. pH Factor: 4-10.
Material: Braided of AAAA asbestos yarn, each strand having been lubricated with TFE suspensoid.

STYLE C-1030

Valve stems or low shaft speeds up to 1000 FPM. For highly corrosive liquid or gas service where a soft, resilient packing is required, also caustic alkali, chlorine, inorganic acids, hydrogen peroxide. Temperature range: —12° to +500°F. pH Factor: 1-13.
Material: Braided of bleached TFE multifilament yarn. Interlaced construction. No lubrication.

STYLE C-1040

Pumps and other high speed rotary shaft applications up to 2000 FPM. Corrosive services such as chlorine (gas), inorganic acids, oleum, solvents and steam at temperatures from +32° to +350°F. pH Factor: 1-12.
Material: Braided of bleached TFE multifilament yarn. Interlaced construction and externally lubricated with Fluorolube.

STYLE C-1045

Valve stems and shaft speed applications up to 1800 FPM. A dense packing designed for applications where lubricants other than TFE are not acceptable. Corrosive chemicals, solvents, gases and food products at temperatures from —120° to +600°F. pH Factor: 0-14.
Material: Braided TFE multifilament yarn impregnated with TFE suspensoid.

STYLE C-1050

Rotary shaft equipment at shaft speeds up to 2000 FPM. An extremely soft and resilient packing for high peripheral speeds. Chemicals, corrosives, gases and food products at temperatures from —120° to +500°F. pH Factor: 0-14.
Material: Specially lubricated braided TFE multifilament yarn with TFE dispersion.

STYLE SS 6AM

Valve stems and expansion joints handling superheated steam, hot gases and other non-petroleum services. Withstands temperatures up to 850°F. pH Factor: 4-8.
Material: Asbestos jacket braided over a dry lubricated plastic core of asbestos graphite and elastomers.

CRANE PACKING COMPANY

6400 OAKTON STREET, MORTON GROVE, ILLINOIS 60053 *(Chicago Suburb)*

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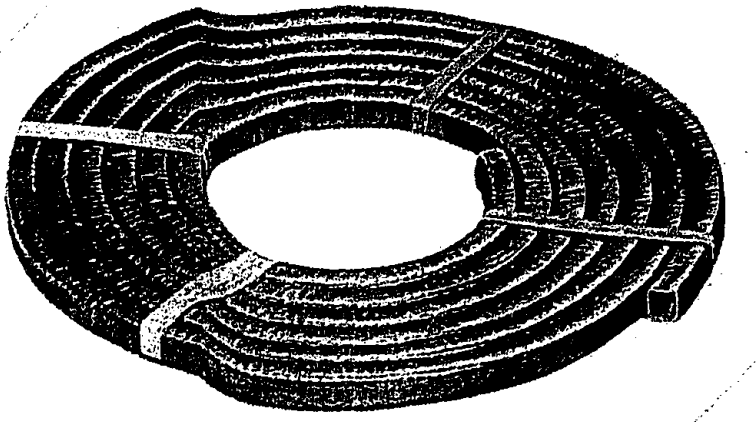
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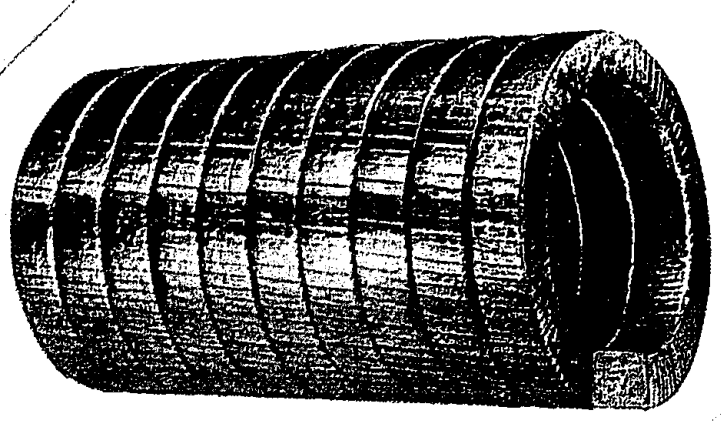
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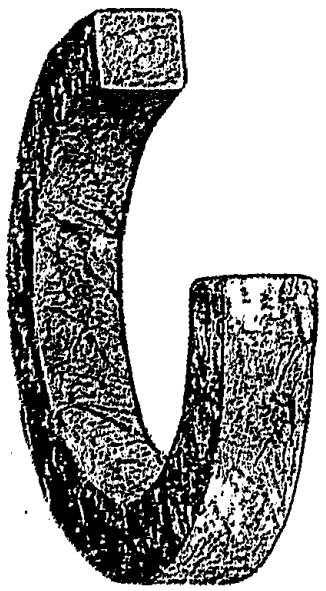
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BULLETIN NO. P- 389

John Crane



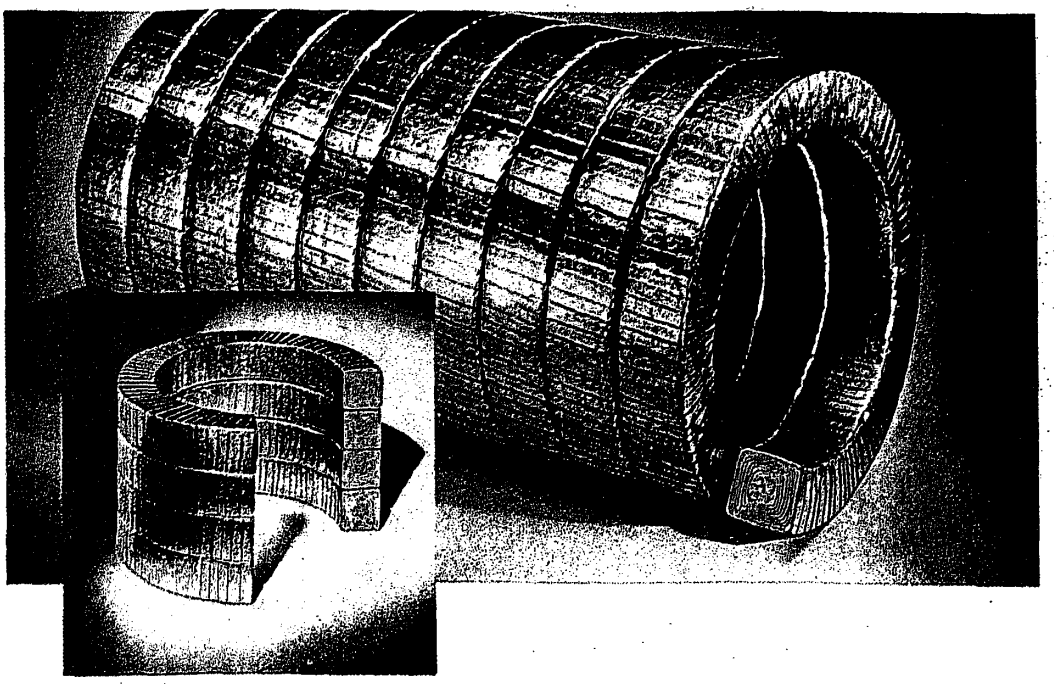




METALLIC PACKINGS

John Crane

CRANE PACKING COMPANY
6400 OAKTON STREET, MORTON GROVE, ILLINOIS 60053 *(Chicago Suburb)*
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In Japan: John Crane Japan, Inc., No. 28 Tsuboya, Cho 2-Chome Kita-Ku, Osaka 530, Japan
OFFICES, WAREHOUSES AND SERVICE DEPOTS THE WORLD OVER



Style 100—Spiral

(In Ring Form: Style 101)

Style 100 is a flexible all-metallic packing made by spirally wrapping thin ribbons of soft babbitt foil, layer over layer construction, and squared to the required size. Each layer of foil is thoroughly lubricated with oil and graphite. Under compression, the packing forms a perfectly lubricated babbitted bearing, as well as providing a perfect seal.

Style 100 is recommended only on rods and shafts in good condition, running in perfect alignment and operating without vibration.

Recommended Services: Air compressors, centrifugal oil pumps, high pressure centrifugal water and hydraulic pumps, pipe line pumps, steam turbine shafts, valve stems and similar equipment.

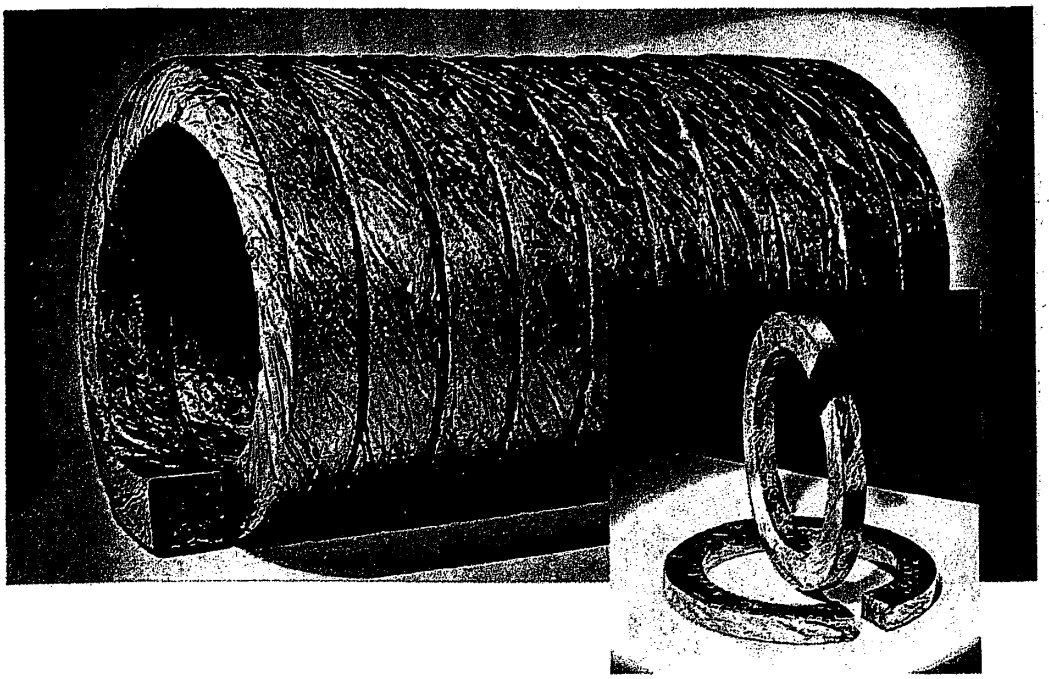
For: temperatures up to 450° F.

SIZES

STYLE 100

Size	Spirals per Box	Feet per Box	Approximate Weight per Box	Size	Spirals per Box	Feet per Box	Approximate Weight per Box
1/8"	2	43	2 1/2 lbs.	1/2"	1	12	9 3/4 lbs.
3/16"	2	30	3 3/8 lbs.	9/16"	1	12	12 lbs.
1/4"	2	22 1/2	5 1/4 lbs.	5/8"	1	12	14 3/4 lbs.
5/16"	2	22 1/2	6 3/8 lbs.	3/4"	1	12	20 1/2 lbs.
3/8"	1	12	5 1/2 lbs.	7/8"	1	12	25 3/4 lbs.
7/16"	1	12	6 3/4 lbs.	1"	1	12	33 5/8 lbs.

Note: When ordering die-formed rings or sets, specify diameter of rod or shaft, inside diameter and depth of box or number of rings desired.



Style 100-M—Spiral

(In Ring Form: Style 101-M)

Metalpac Style 100-M is a flexible all-metallic packing made of continuous thin ribbons of soft babbitt foil, spirally and loosely wrapped, crinkled and folded, and squared to the required size. Each layer of the foil is thoroughly lubricated with oil and graphite. All the voids and interstices form reservoirs of lubrication. When under compression, these reservoirs furnish lubrication to the moving parts on which the packing is installed.

Style 100-M is recommended only on rods and shafts in good condition, running in perfect alignment and operating without vibration.

Recommended Services: Air compressors, centrifugal oil pumps, high pressure centrifugal water and hydraulic pumps, pipe line pumps, steam turbine shafts, valve stems and similar equipment.

For: temperatures up to 450° F.

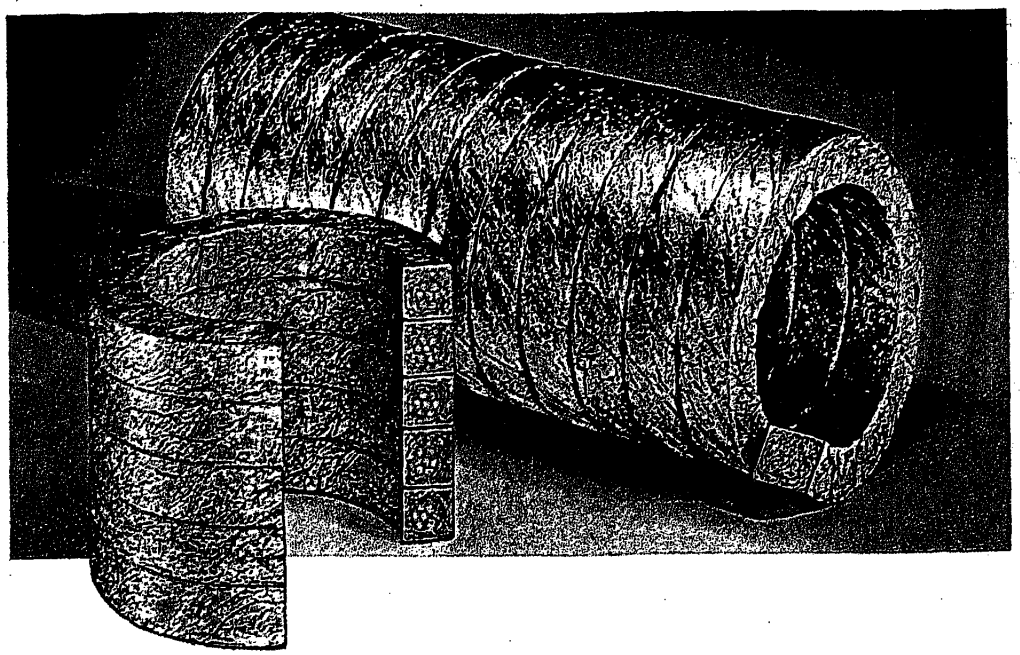
SIZES

STYLE 100-M

Size	Spirals per Box	Feet per Box	Approximate Weight per Box	Size	Spirals per Box	Feet per Box	Approximate Weight per Box
1/4"	1	22 1/2	3 3/4 lbs.	1/2"	1	21	13 3/4 lbs.
5/16"	1	22 1/2	5 3/4 lbs.	9/16"	1	19	16 1/2 lbs.
3/8"	1	18 1/2	7 3/4 lbs.	5/8"	1	19 1/2	19 1/2 lbs.
7/16"	1	17	8 1/2 lbs.	11/16"	1	16 1/2	17 lbs.
				3/4"	1	16	25 lbs.

Note: When ordering die-formed rings or sets, specify diameter of rod or shaft, inside diameter and depth of box or number of rings desired.

HIGH TEMPERATURE METALLIC PACKINGS / STYLES 100-AL and 100-CU



Style 100-AL (Aluminum)—**Spiral**

(In Ring Form: Style 101-AL)

Style 100-CU (Copper)—**Spiral**

(In Ring Form: Style 101-CU)

Styles 100-AL and 100-CU are flexible metallic packings made by spirally wrapping thin ribbons of soft-annealed aluminum or copper foil loosely around a small core of pure dry asbestos roving and squared to the desired size. Every ribbon is thoroughly lubricated with high temperature oil and graphite. All the voids and interstices form reservoirs of lubrication. Under compression, these reservoirs furnish lubrication to the moving parts.

Many centrifugal hot oil pumps with hardened steel shafts of 500 Brinnell and over are packed successfully with these packings.

Recommended Services: High temperature centrifugal hot oil charge pumps handling crude oil, pressure distillate and lower fractions at temperatures up to 1000° F. Applications include boiler feed pumps, diphenyl valves, hot oil valves, still necks and similar equipment.

For: temperatures up to 1000° F.

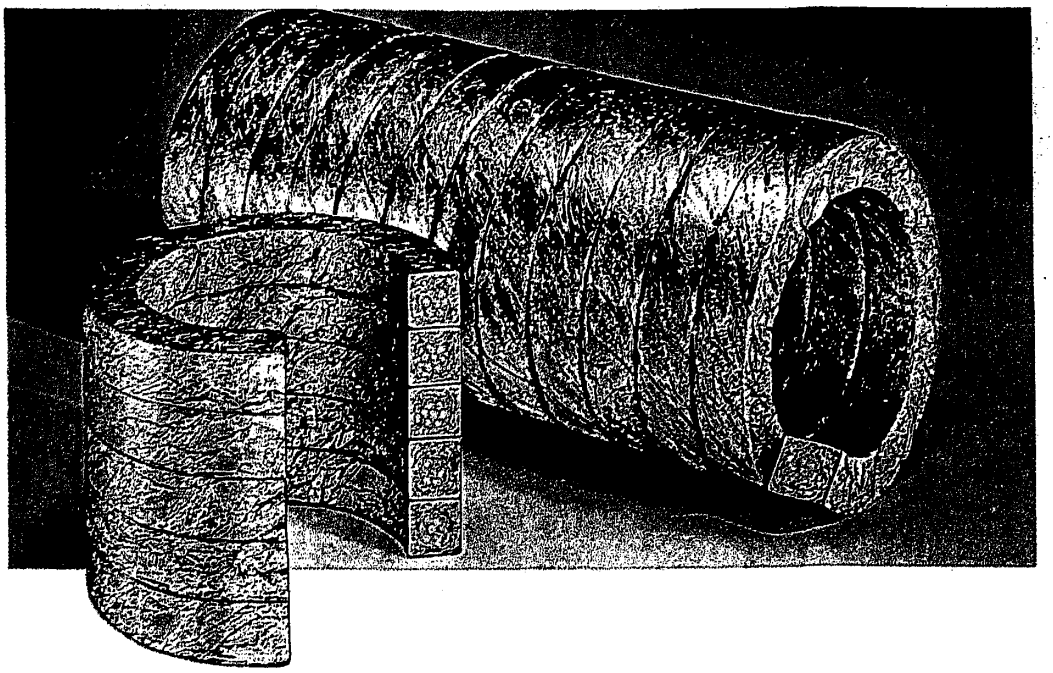
SIZES: 100-AL ⅛" Through ¾", 100-CU 3/16" Through ¾"

STYLES 100-AL—100-CU

Size	Spirals per Box	Feet per Box	Approx. Wt. per Box 100-AL	100-CU	Size	Spirals per Box	Feet per Box	Approx. Wt. per Box 100-AL	100-CU
⅛"	2	43	7/16 lbs.		7/16"	1	18	1¾ lbs.	2⅝ lbs.
3/16"	1	27½	⅝ lbs.		½"	1	21	2¾ lbs.	5⅝ lbs.
¼"	2	44	1⅝ lbs.	2¾ lbs.	9/16"	1	19	2⅞ lbs.	6 lbs.
5/16"	2	44	2¾ lbs.	8⅞ lbs.	⅝"	1	19	3½ lbs.	6½ lbs.
⅜"	1	18½	1½ lbs.	2⅝ lbs.	¾"	1	16	5 lbs.	7 lbs.

Note: When ordering die-formed rings or sets, specify diameter of rod or shaft, inside diameter and depth of box or number of rings desired.

RESILIENT CORE METALLIC PACKING / STYLE 110-M



Style 110-M—Spiral

(In Ring Form: Style 111-M)

The core of Style 110-M is soft dry braided asbestos. Ribbons made of soft babbitt foil are twisted, crinkled and folded around the core, and the complete packing is squared to the required size.

The babbitt foil is thoroughly lubricated with oil and graphite to reduce shaft friction. Asbestos core construction provides the resiliency necessary to maintain minimum leakage with minimum attention.

Recommended Services: Centrifugal pumps with steel shafts handling crude oil, distillates, water and salt water. Especially adaptable for use as end rings with any of the Super Seal Plastic Packing styles. (See Bulletin No. P-390.)

For: temperatures up to 450° F.

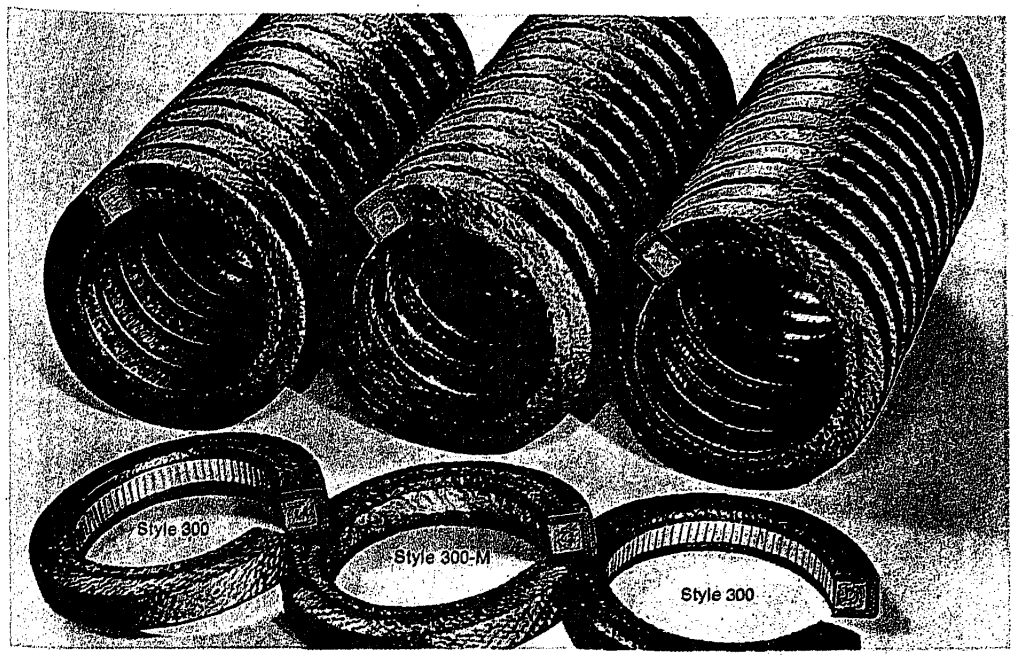
SIZES

STYLE 110-M

Size	Spirals per Box	Feet per Box	Approximate Weight per Box	Size	Spirals per Box	Feet per Box	Approximate Weight per Box
3/16"	1	27' 6"	2¼ lb.	½"	1	21'	9 lb.
¼"	1	24'	3⅜ lb.	9/16"	1	19'	9⅝ lb.
5/16"	1	22' 6"	4⅛ lb.	⅝"	1	17' 6"	9⅞ lb.
⅜"	1	18' 6"	4½ lb.	¾"	1	16'	17 lb.
7/16"	1	17'	6 lb.				

Note: When ordering die-formed rings or sets, specify diameter of shaft, inside diameter and depth of box, lantern location and width or number of rings desired.

LOW TEMP. ASBESTOS CHANNEL PACKINGS / STYLES 300 and 300-M



Style 300—Spiral

(In Ring Form: Style 301)

Style 300-M—Spiral

(In Ring Form: Style 301-M)

Style 300 is a semi-metallic channel packing constructed with a flexible metallic insert of Style 100 (see page 2) securely fastened to the asbestos cloth channel as a wearing face.

Style 300-M is a semi-metallic channel packing constructed with a flexible metallic insert of Style 100-M (see page 3) securely fastened to the asbestos cloth channel as a wearing face.

Both packings provide an anti-frictional metallic wearing face. All asbestos channels are oil-proof, synthetic treated stock.

Recommended Services: Air, steam, gas and ammonia rods, oil rods, oil plungers, steam valve rods and similar equipment.

For: temperatures up to 450° F.

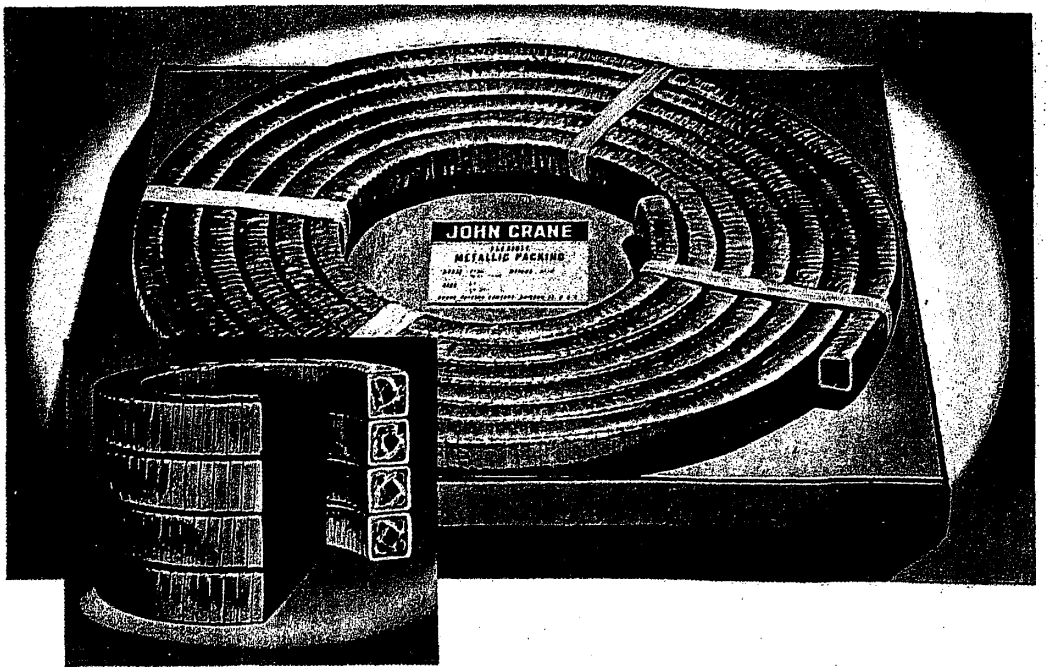
SIZES

STYLES 300—300-M

Size	Spirals per Box	Feet per Box	Average Weight per Box	Size	Spirals per Box	Feet per Box	Average Weight per Box
1/4"	1	12	1 3/4 lbs.	11/16"	1	12	9 lbs.
5/16"	1	12	2 1/8 lbs.	3/4"	1	12	10 3/4 lbs.
3/8"	1	12	2 5/8 lbs.	13/16"	1	12	12 3/4 lbs.
7/16"	1	12	2 7/8 lbs.	7/8"	1	12	13 7/8 lbs.
1/2"	1	12	4 1/2 lbs.	15/16"	1	12	16 1/4 lbs.
9/16"	1	12	5 7/8 lbs.	1"	1	12	18 1/4 lbs.
5/8"	1	12	7 1/8 lbs.				

Note: When ordering die-formed rings or sets, specify diameter of rod or plunger, inside diameter and depth of box or number of rings desired.

FLAX CORE METAL-FACE PACKING / STYLE 140



Style 140—Spiral

(In Ring Form: Style 141)

Style 140 is a semi-metallic packing made by spirally wrapping thin ribbons of soft babbitt foil around a core of lubricated braided flax, layer over layer construction, and squared to the required size. The heavy babbitt foil jacket offers an anti-frictional metallic wearing face. The flax core produces the necessary resilience.

This packing outlasts flax many times and results in large power savings.

Style 140 is recommended only for new or overhauled equipment.

Recommended Services: Stern gland packing on tail shafts, large circulating pumps, water wheels, hydraulic turbine shafts, kaplan heads and similar equipment.

For: temperatures up to 150° F.

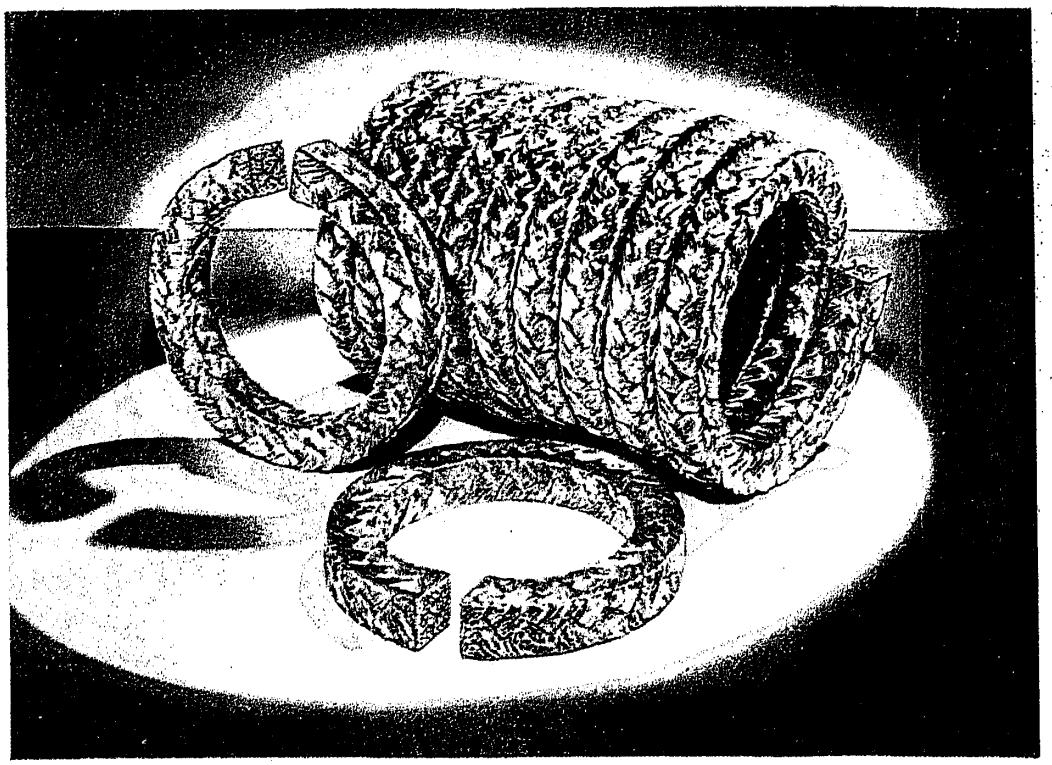
SIZES

STYLE 140

Size	Pieces per Box	Feet per Box	Approximate Weight per Box	Size	Pieces per Box	Feet per Box	Approximate Weight per Box
1/4"	2 Spiral	24	3 lbs.	1 1/16"	1 Flat Coil	25	23 3/4 lbs.
5/16"	1 Spiral	12	1 7/8 lbs.	3/4"	1 Flat Coil	25	25 lbs.
3/8"	1 Spiral	12	2 3/8 lbs.	7/8"	1 Flat Coil	25	31 1/4 lbs.
7/16"	1 Spiral	12	3 lbs.	1"	1 Flat Coil	25	37 1/2 lbs.
1/2"	1 Spiral	12	3 1/2 lbs.	1 1/8"	1 Flat Coil	25	43 3/4 lbs.
9/16"	3 Flat Coils	75	25 7/8 lbs.	1 1/4"	1 Flat Coil	25	50 1/4 lbs.
5/8"	3 Flat Coils	75	37 1/2 lbs.	1 3/8"	1 Flat Coil	25	60 5/8 lbs.

Note: When ordering die-formed rings or sets, specify diameter of shaft or liner, inside diameter and depth of box or number of rings desired.

BRAIDED COPPER PACKING / STYLE 550



Style 550—Spiral

(In Ring Form: Style 551)

Style 550 is an all-metallic packing made from pure dead-soft annealed copper wires, square braided. It is recommended on steel rods only.

Recommended Services: Bushing rings in stuffing boxes where there is excessive clearance between the steel rod and the packing gland or throat. Also for bushing rings on steam, air, water, oil and high temperature gases.

For: temperatures up to 1000° F.

SIZES

STYLE 550

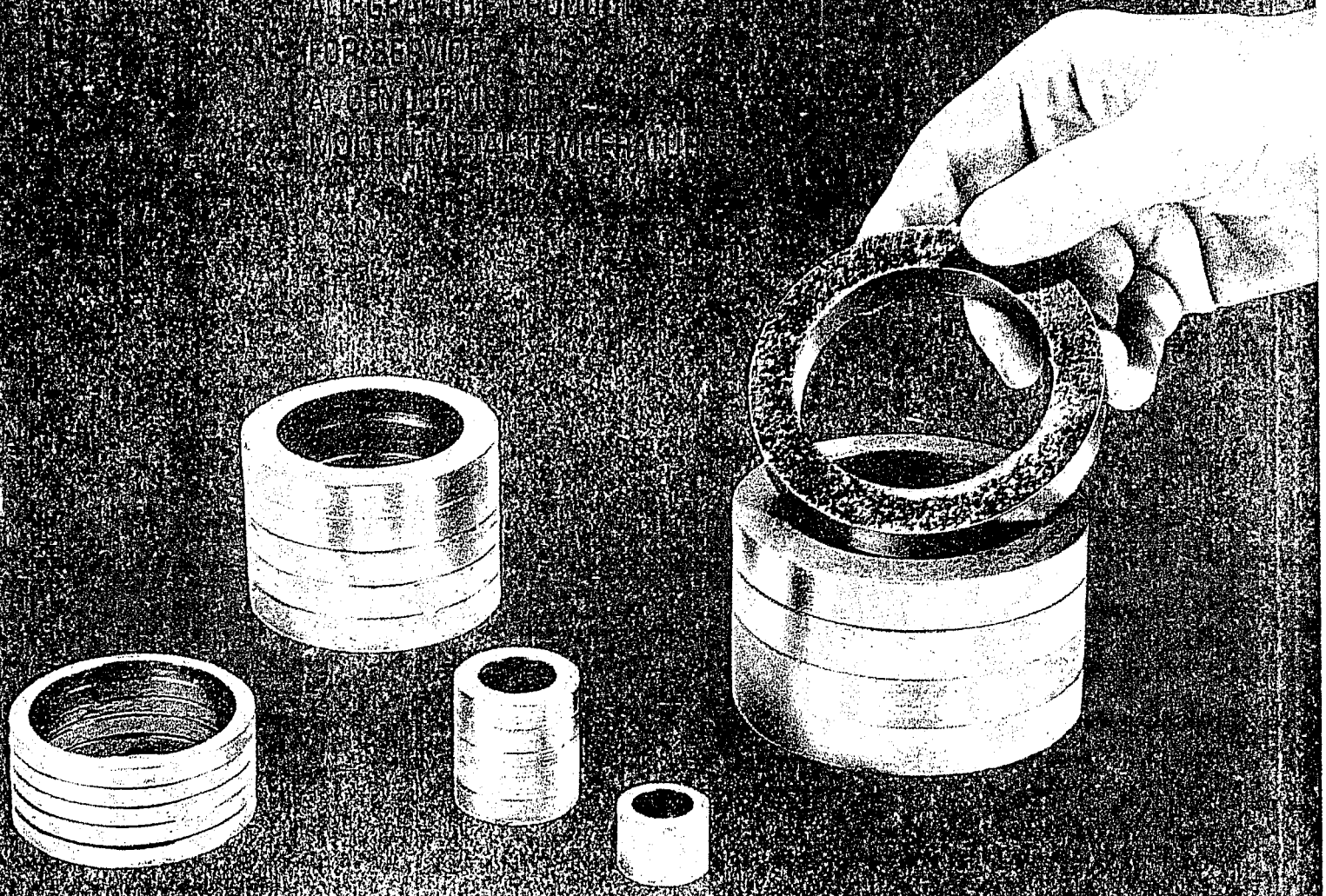
Size	Spirals per Box	Feet per Box	Approximate Weight per Box	Size	Spirals per Box	Feet per Box	Approximate Weight per Box
1/4"	1	21	3 lbs.	11/16"	1	18	19 1/2 lbs.
5/16"	1	22	5 lbs.	3/4"	1	16	21 5/8 lbs.
3/8"	1	19	6 lbs.	13/16"	1	15	22 1/2 lbs.
1/16"	1	17	7 1/8 lbs.	7/8"	1	17	28 7/8 lbs.
1/2"	1	16	8 5/8 lbs.	15/16"	1	16	32 lbs.
9/16"	1	20	13 3/4 lbs.	1"	1	15	34 1/2 lbs.
5/8"	1	19	17 1/8 lbs.				

Note: When ordering die-formed rings or sets, specify diameter of rod or sleeve, inside diameter and depth of box or number of rings desired.

NOW!

GRAFOIL BRAND PACKING

A CORROSION RESISTANT
ALL-GRAPHITE PRODUCT
FOR SERVICE
AT OR OVER 1100°F
WITHOUT METAL TEMPERATURE
LIMITATIONS



FEATURING

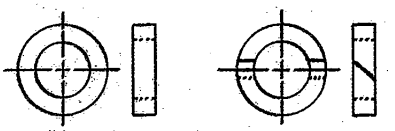
- HIGH THERMAL CONDUCTIVITY - RAPID HEAT DISSIPATION
- ESSENTIALLY LEAK-FREE OPERATION WITH OR WITHOUT EXTERNAL COOLING
- SELF LUBRICATING
- LONG LIFE WITH LOW MAINTENANCE

DESCRIPTION

"Grafoil" packing* is an all-graphite packing containing no resin binders or inorganic fillers; its corrosion and high-temperature resistance are outstanding. "Grafoil" packing features a laminated construction with the laminations perpendicular to the shaft to take full advantage of the direction-dependent high thermal conductivity of this product. Such a radial orientation assures rapid dissipation of frictional heat, and facilitates heat conduction into the stuffing box when required.

"Grafoil" packing is self-lubricating at all operating temperatures from cryogenic temperatures to those of molten metal. Because the packing does not contract when heated, it is less sensitive to over-tightening of gland ring nuts than plastic packing. While external lubricating and/or cooling may be used with "Grafoil" packing, it is not necessary if the recommended break-in procedures are followed.

The standard density for "Grafoil" packing is 70 lb./cu. ft. "Grafoil" packing is supplied as one piece or split preformed rings with ID tolerances of +.000 inches, −.005 inches and OD tolerances of +.010 inches, −.000 inches. One piece rings are recommended whenever it is convenient to install them; split rings are particularly recommended when adding packing rings to a stuffing box.



One Piece Ring — Split Ring

When installed with care, a full set of split rings can be used to completely repack a stuffing box.

INSTALLATION, OPERATION AND MAINTENANCE

Easy Installation

"Grafoil" packing is as easy to install as any packing on the market. Standard procedures are followed. For specific instructions on Rotating and Reciprocating Equipment and Valves see special instructions which are included with each shipment of "Grafoil" packing.

Unattended Operation

After a normal break-in period of 24 hours, packing gland bolts need only an occasional adjustment.

Low Maintenance

High inherent lubricity safeguards against damage to shafts or stems. The lubricating property of "Grafoil" packing cannot be destroyed by fusion, degradation, leaching, run-off or squeezing. Consequently, there is seldom a need to repack an entire stuffing box — your labor costs are minimized.

HOW TO ORDER

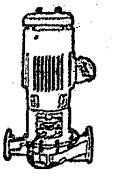
Specify ID, OD and thickness, quantity, density and whether split or one piece rings are required. Please furnish stuffing box and shaft diameters and tolerances for check on clearances.

*U.S. Patent No. 3,404,061

"Grafoil" is a registered trademark of Union Carbide Corporation

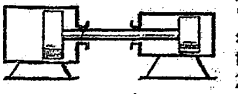
TYPICAL INSTALLATIONS

Centrifugal Pump



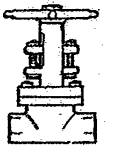
In a metal centrifugal pump operating at 1750 rpm and handling molten pitch at 300°F, "Grafoil" packing has operated for six months with no leakage and no packing gland take-up. The best previous packing lasted only one month and caused serious abrasion of the shaft. Strip heaters mounted around the stuffing box keep the pitch molten.

Plunger Pump



"Grafoil" packing has been operating satisfactorily in a plunger pump for three months handling isopropanol at 2400 psig pressure.

Valve



In a laboratory test, a two-inch bronze gate valve packed with "Grafoil" packing was opened and closed 30,000 times against 100 psig steam — equivalent to over four years under normal plant operation. The test was terminated because threads in the valve body wore out. The "Grafoil" packing was still in good condition. The valve stem showed no appreciable wear and had developed a highly polished surface in the area passing through the packing.

CRANE PACKING COMPANY

6400 OAKTON STREET, MORTON GROVE, ILLINOIS 60053 *(Chicago Suburb)*

In Canada: Crane Packing Company, Ltd., Box 3248, Station C, Hamilton, Ont.
In Mexico: Industrias John Crane de Mexico, S.A. • Poniente 152 #679 Industrial Vallejo, Mexico, D.F.
In Brazil: John Crane Industria E Comercio, Ltda. • Avenida Jurubatuba 600, Sao Bernardo do Campo, S.P.
In Australia: John Crane Mauri Pty., Ltd., 166 Eldridge Road, Bankstown, New South Wales, Australia
In Europe: Crane Packing Ltd., Slough, Bucks, England
In Japan: John Crane Japan, Inc., No. 28, Tsuboya-cho 2-chome, Kita-ku, Osaka 530, Japan

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TECHNICAL INFORMATION

"GRAFOIL" RIBBON-PACK

INTRODUCTION

"Grafoil" Ribbon-Pack is a new form of "Grafoil" graphite packing* expressly developed for universal maintenance service on valves and pumps. "Grafoil" Ribbon-Pack has all the merits of preformed "Grafoil" packing rings plus these additional benefits:

- Stuffing box and shaft or stem dimensions need not be measured prior to packing.
- Minimum stock of "Grafoil" Ribbon-Pack eliminates extensive packing ring inventory.
- Packing characteristics can be controlled at will.

"Grafoil" graphite is a flexible product containing no binders, lubricants, or other additives. It has the chemical inertness and lubricity typical of pure graphite but, unlike conventional graphite, has highly directional values for thermal conductivity, thermal expansion, and electrical resistivity as shown in table on page 5.

DESCRIPTION

"Grafoil" Ribbon-Pack is specially processed to restructure the lamellar planes to provide considerably greater expansion as shown in Figure 1. This

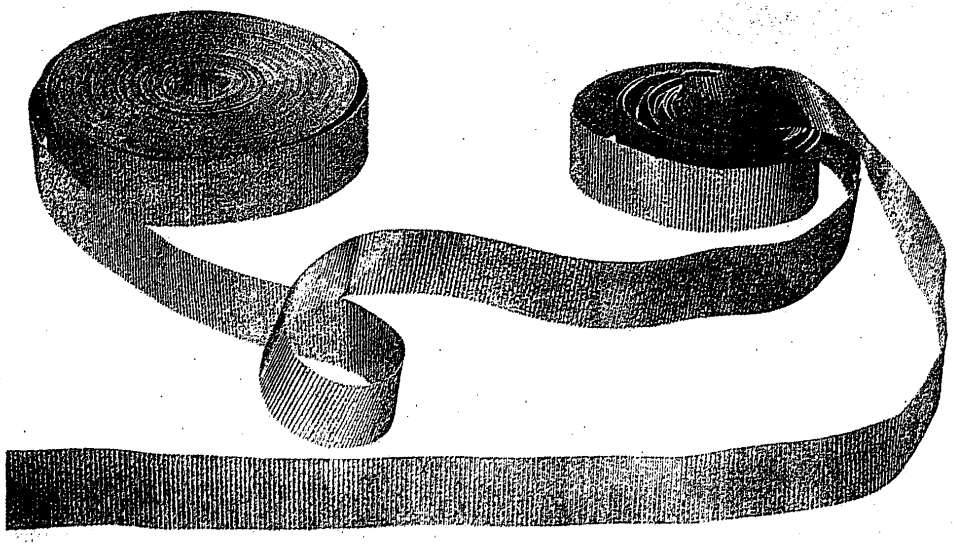


Figure 1 – Restructured lamellar planes give "Grafoil" Ribbon-Pack greater expansion capability.

*U.S. Patent No. 3,404,061

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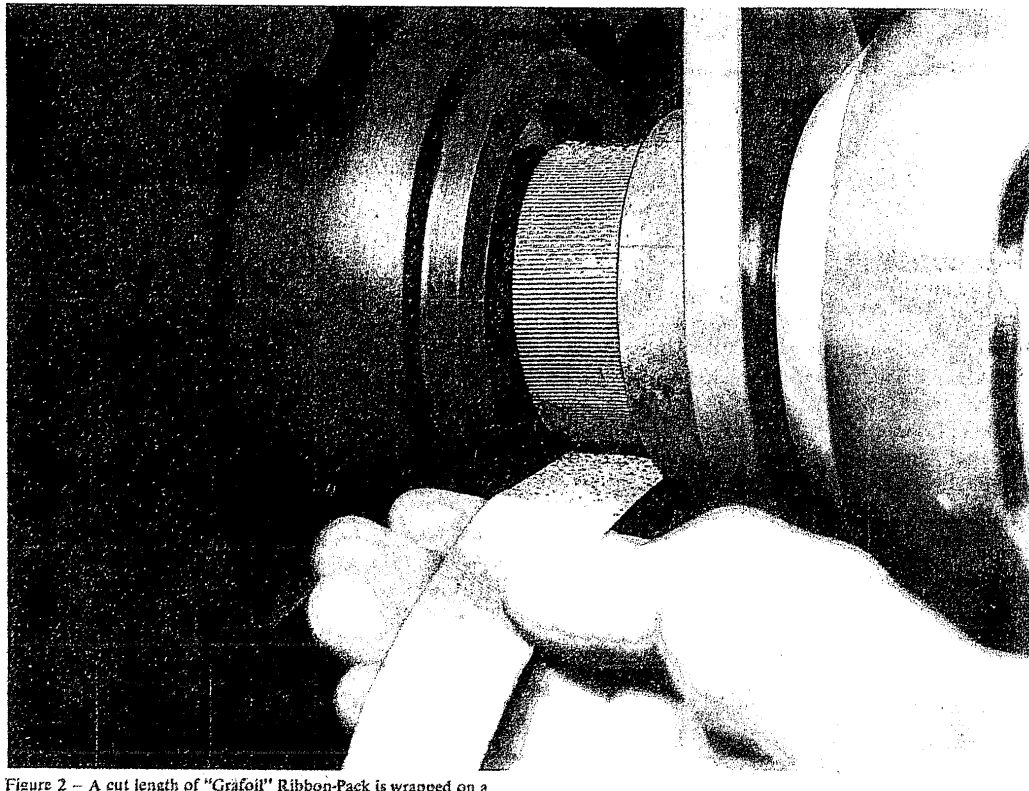


Figure 2 – A cut length of "Grafoil" Ribbon-Pack is wrapped on a pump shaft prior to being pushed into the stuffing box.

restructuring permits "Grafoil" Ribbon-Pack to fit any size pump or valve as it is being formed into a ring in place.

Ribbon-Pack is easily cut to length, rolled on shaft or stem as shown in Figure 2, pushed into the stuffing box to form a solid, endless packing ring when compressed. The highly directional thermal properties of "Grafoil" graphite can be readily controlled by the manner in which the material is wrapped around the shaft as illustrated in Figure 3. A loose wrap produces packing having the highest thermal conductivity in the radial direction and highest thermal expansion in the axial direction. A tight wrap produces the reverse – highest thermal conductivity axially, and highest thermal expansion radially. Furthermore, this control can be exercised ring-by-ring in the same box. Regardless of a

tight or loose wrap, the final density of each ring is dependent only on the unit loading exerted on its cylindrical end face while being compressed.

Installation Instructions are included with each box of "Grafoil" Ribbon-Pack. IMPORTANT NOTE: "Grafoil" Ribbon-Pack is electrically conductive – keep away from bare wires.

EQUIPMENT REQUIREMENTS

Optimum performance from "Grafoil" Ribbon-Pack is attained by adhering to the following recommendations of which shaft Total Indicator Reader (T.I.R.) and surface finish are the most important items.

Shaft

T.I.R.	0.002 in
Surface Finish	32 RMS or better
Surface Condition	Free of pits, burrs, scratches
Coatings	Rarely useful
Diameter	True, not egg-shaped or tapered

Stuffing Box

Clearance at Bottom	0.020 in max

NOTE: If box is worn, or originally designed to larger clearance, or if solids are present in the system, one or two rings of woven or braided graphite filament packing are recommended in bottom of box to prevent any extrusion of the Ribbon-Pack.

Gland

Diametrical Clearance, Box I.D. to Gland O.D.	0.010 in max
Diametrical Clearance, Gland I.D. to Shaft or Stem	0.020 in max

See NOTE in Stuffing Box section for suggested means of closing up wider clearances. Higher pressures require closer clearances.

GENERAL SERVICE

Applications not involving extremes of temperature, pressure, or other special conditions are normally handled satisfactorily by one bottom ring of loose wrap compressed into tiered layers as illustrated in Figure 3, followed by subsequent rings of medium wrap. The last ring or two may conveniently be made a tight wrap for faster fill, since the greater stiffness of tightly wrapped rings, when next to the gland, also bears the greatest gland pressure.

DOWTHERM HEAT TRANSFER FLUID

"Grafoil" Ribbon-Pack is unexcelled in this service. Not only is it completely unaffected by the high operating temperatures and vigorous solvent action of Dowtherm fluid, but it is the only packing which, because of its unique thermal conductivity, can make effective use of water-jacketed stuffing boxes to extract heat from the shaft and stabilize all dimensions in the packed areas.

"Grafoil" Ribbon-Pack is best installed in Dowtherm fluid service in a medium wrap as shown in Figure 3, to equalize in all directions its thermal conductivity, thermal expansion, and resiliency. The bottom ring can be either a loose wrap of Ribbon-Pack flattened into layers at right angles to the shaft, or a ring of woven graphite filament packing, to screen out carbon and other abrasive particles, and to support subsequent rings against extrusion past the bottom of the box.

Spring loading the gland ring frequently shortens the run-in time and maintains settings for longer periods between adjustments. Compression type (Belleville) washers under the gland nuts make compact and convenient springs for such purpose. Typically, for 1/2 inch diameter bolts, the washers should go flat at 500 to 700 pounds load.

Pumps which are designed for thermal fluid service, and which have jacketed stuffing boxes, will generally give more satisfactory service if those jackets are water cooled.

HIGH TEMPERATURE, HIGH PRESSURE WATER

"Grafoil" Ribbon-Pack has successfully sealed hot water at pressures of 700 psi; there is no lubricant or additive to contaminate the water. The long life and purity of Ribbon-Pack have helped extend high temperature, high pressure water systems to a growing number of applications outside the now familiar boiler feed water systems.

HIGH TEMPERATURE, HIGH PRESSURE STEAM

"Grafoil" Ribbon-Pack is giving outstanding service in commercial steam systems involving high pressures and temperatures. Typical installations include 1200°F steam at 2000 psi. The lubricity, resiliency, and structure of "Grafoil" graphite remain unchanged at such temperatures. There is no lubricant or additive to be squeezed out, vaporized or carbonized. Ribbon-Pack does not turn rock-hard at any temperature; it is as easy to remove as to install. Once installed and run-in, it normally needs no further adjustment, resulting in greatly reduced maintenance. Even at a cost as low as $8.00 a year for a small steam leak, "Grafoil" Ribbon-Pack soon pays for itself.

For additional examples, ask for a copy of our fact sheet, "Power Plant Reports".

STRONG CORROSIVES

"Grafoil" Ribbon-Pack is unaffected by hydrochloric and hydrofluoric acids at any temperature or concentration. A typical HF pump which previously required the complete removal of its packing after pumping out a single storage tank now operates with "Grafoil" Ribbon-Pack left in place between runs.

For a list of corrosives handled dependably and economically by "Grafoil" graphite, see Catalog Section G-8805.

ESTIMATING RIBBON-PACK REQUIRED

The simplest method for determining the footage of packing required for a given box is to roll up one ring to the chosen tightness of wrap (see Figure 3), remove it, and cut all subsequent ribbon to same length. When it is necessary to estimate this length in advance, the following formula is suggested:

$$\text{Length, Ft} = 3.7\,(A^2 - B^2) \times \frac{C}{W}$$

Where:
A = Box I.D., in
B = Shaft O.D., in
C = Box Depth, in
W = Width of Ribbon-Pack, in

Example:
A = 3 in
B = 2 in
C = 1-3/4 in
W = 1 in

$$\text{Ft Required} = 3.7\,(3^2 - 2^2) \times \frac{1\text{-}3/4}{1}$$
$$= 3.7 \times 5 \times 1.75$$
$$= 32.4 \text{ ft}$$

PHYSICAL PROPERTIES "GRAFOIL" RIBBON-PACK

PROPERTY	APPROXIMATE VALUE		UNIT
Density, Bulk	70 1.1		lb/ft^3 g/cc
Ash Content	0.1 max		90
Melting Point	Sublimes at 3,000 Sublimes at 3,300		°F °C
Coefficient of Friction with 8 psi loading against stainless steel	0.05		—
Permeability across thickness at 1 atmosphere and 70°F	$4 - 9 \times 10^{-6}$		darcys*
Compressive Strength	24,000 1,700		psi kg/cm^2
Electrical Resistivity at 70°F			
Along length and width	$3 - 4 \times 10^{-4}$		ohm-in
Along length and width	$7 - 10 \times 10^{-4}$		ohm-cm
Thermal Conductivity	at 70°F	at 2,000°F	
Along length and width	80	25	$\frac{btu\text{-}ft}{hr(ft^2)(°F)}$
Through thickness	3	2	
	at 21°C	at 1,093°C	
Along length and width	0.33	0.10	$\frac{cal\text{-}cm}{sec(cm^2)(°C)}$
Through thickness	0.012	0.0083	
Thermal Expansion (CTE)	70°F – 2,000°F	2,000°F – 4,000°F	
Along length and width	-0.2	0.5	10^{-6}(in/in)/°F
Through thickness	15.0	—	
	21°C – 1,093°C	1,093°C – 2,244°C	
Along length and width	-0.36	0.9	10^{-6}(cm/cm)/°C
Through thickness	27.0	—	

*darcys ÷ 0.0197 centipoise = Helium Admittance at 1 atmosphere and 70° F

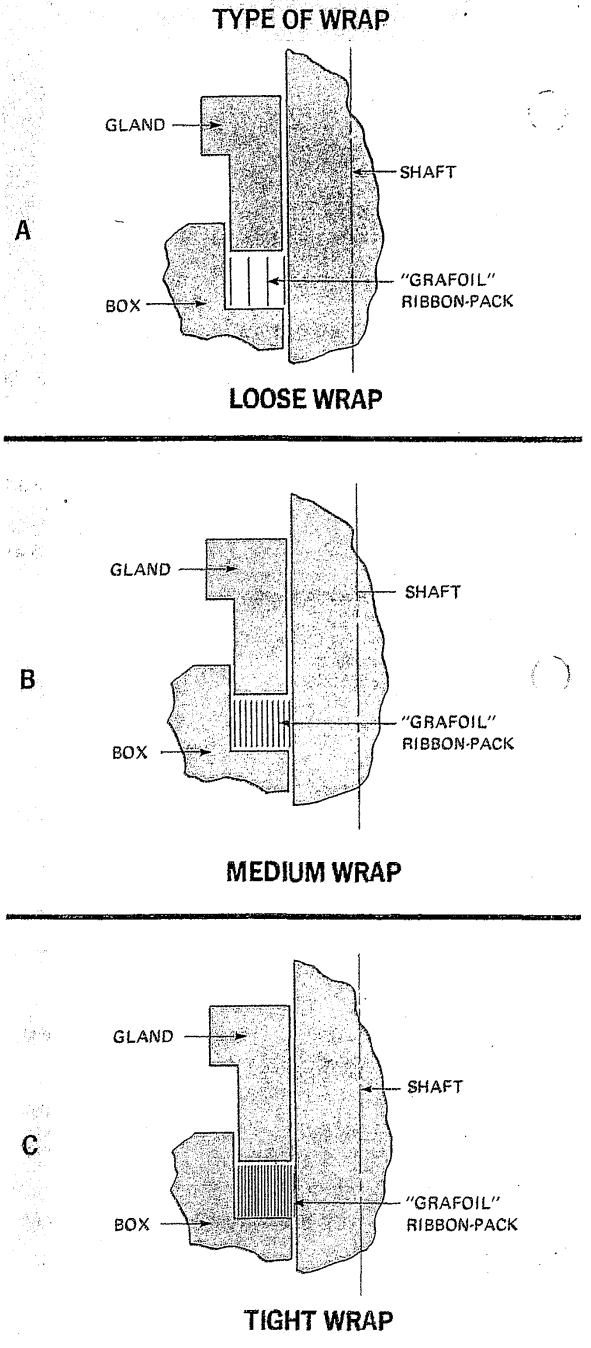
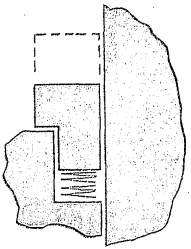
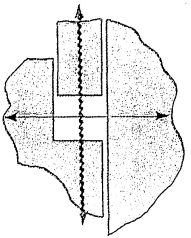
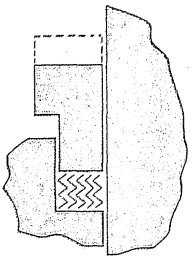
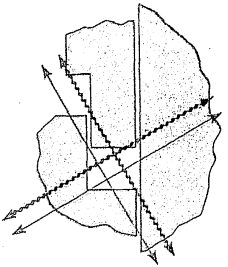
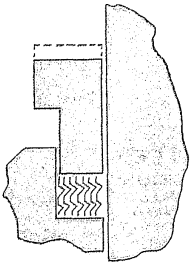
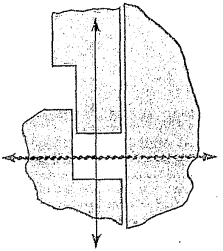


FIGURE 3

TIGHTNESS OF WRAP VERSUS FINAL STRUCTURE AND PROPERTIES

FINAL STRUCTURE	FINAL PROPERTIES
	
TIERED LAYERS	SIMILAR TO PRE-FORMED RINGS
	
CONTINUOUS "W"	EQUALIZED, ALL DIRECTIONS
	
SPACED "V"	OPPOSITE TO PRE-FORMED RINGS

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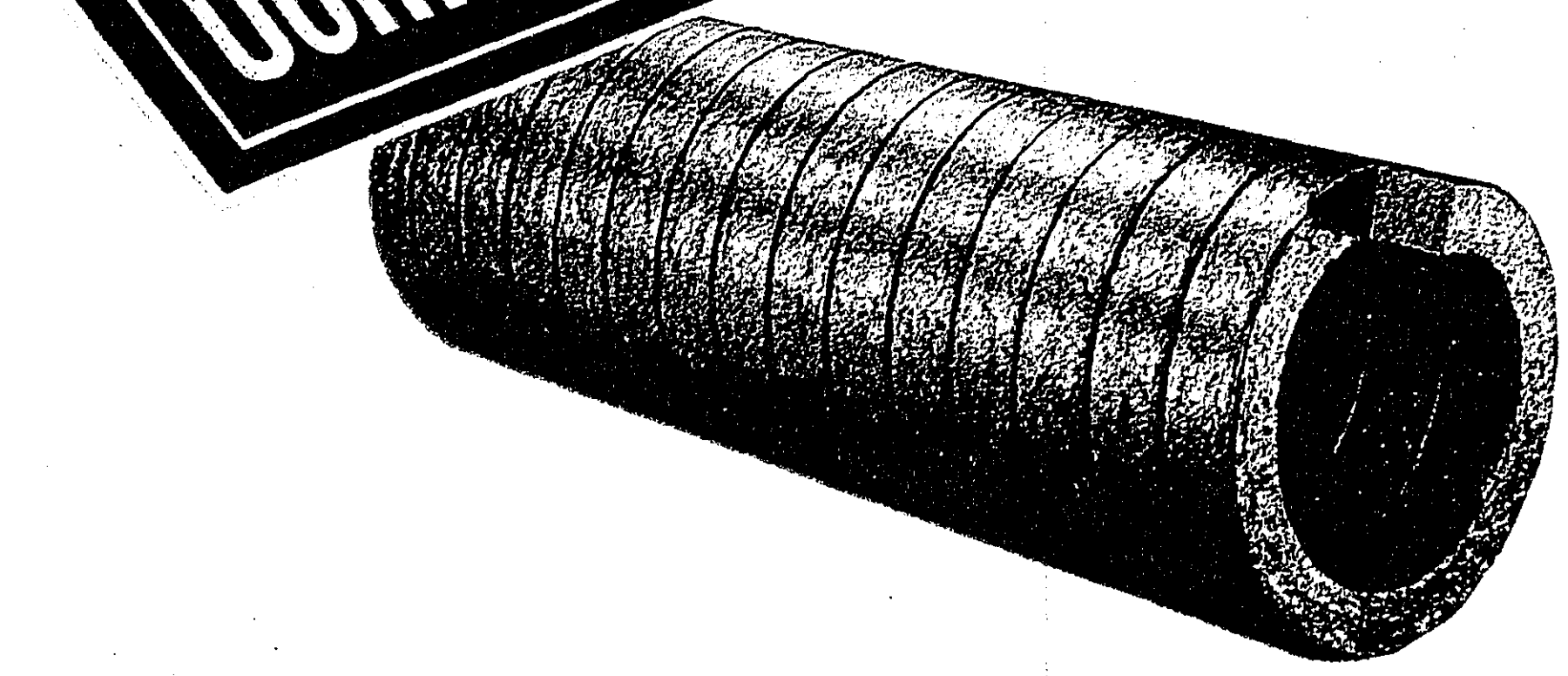
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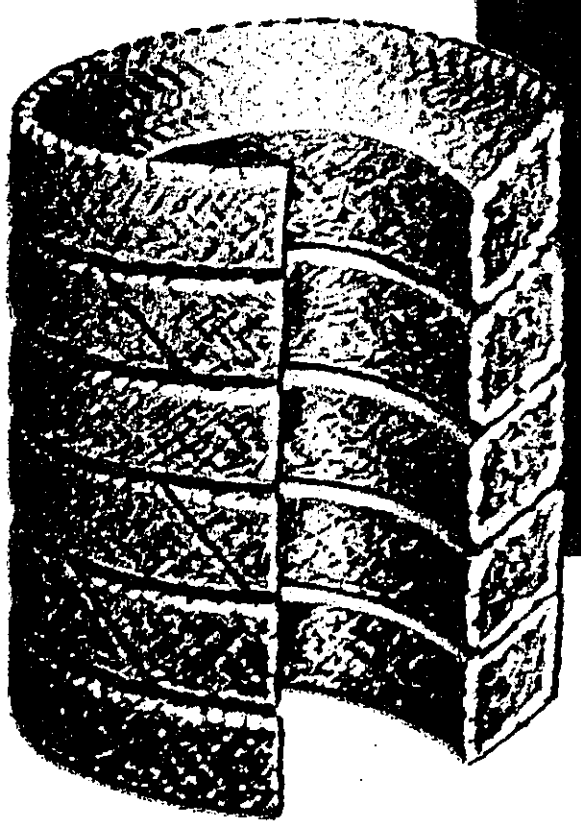
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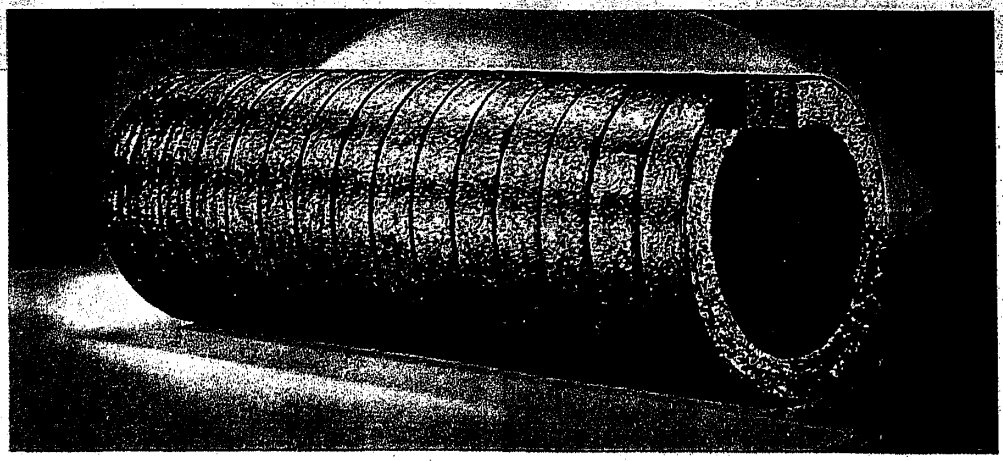
John Crane



Super-Seal Packings







SUPER-SEAL DRY-GRAPHITED PACKINGS

Super-Seal is a superior-grade general purpose packing composed of special long-fiber pure asbestos, suitable anti-frictional metal particles, fine lubricating graphite and special binders to suit specific conditions. It is manufactured by a process which dry-graphitizes every asbestos fiber and metal particle. The particles are evenly distributed throughout the packing, assuring an anti-frictional wearing face.

Super-Seal retains its resiliency and does not dry out or harden. It contains no volatile oils. Materials of composition and lubricant cannot be squeezed out or driven off under heat. The major ingredients are bonded together with a resilient binder. This insures a better seal with less friction and longer packing life.

Super-Seal is available in the following styles for special services:

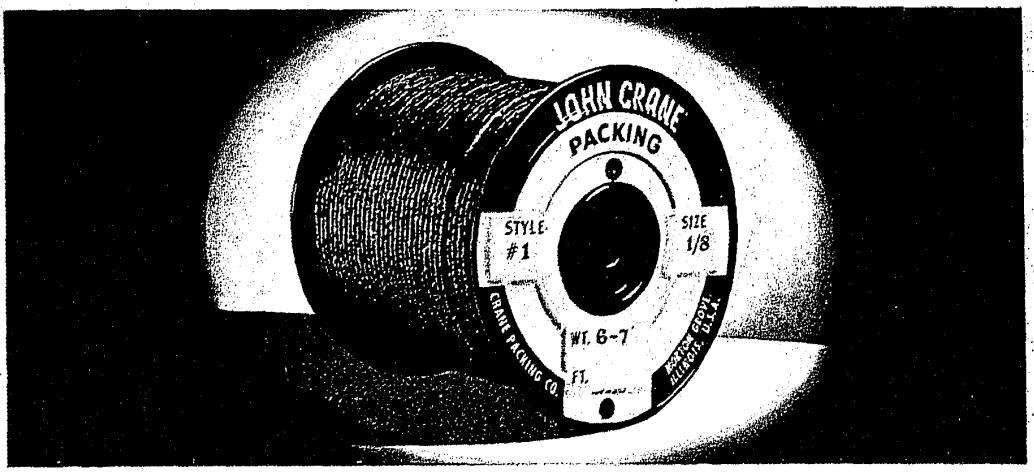
Super-Seal No. 1—Consists of white metal particles, graphite, binder and special long-fiber asbestos.
Recommended Services: Air, water, steam, gases, ammonia, mild chemicals and all general services where temperatures do not exceed 550° F.

Super-Seal No. 2—Consists of synthetic oil-proof binder, graphite and special long-fiber asbestos.
Recommended Services: Hot oils, distillates, vapors and gases where temperatures do not exceed 750° F.

Super-Seal No. 3—Consists of white metal particles, graphite, synthetic oil-proof binder and special long-fiber asbestos.
Recommended Services: Oils, solvents and petroleum distillates where temperatures do not exceed 550° F.

Super-Seal No. 4—Consists of mica, binder and special long-fiber asbestos. This packing contains no graphite and is entirely non-metallic. Color is white.
Recommended Services: Food, fruit juices and edible products where a non-toxic packing is necessary. Especially recommended for use on stainless steel.

Super-Seal No. 6—Consists of graphite, special long-fiber asbestos and binder. This packing is non-metallic.
Recommended Services: For use where a non-metallic plastic packing with extreme resilience is required and where temperatures do not exceed 750° F. Also for caustic alkali and crystalline liquors and liquids containing solid matter in suspension.



SUPER-SEAL PACKINGS
ARE AVAILABLE IN THE FOLLOWING FORMS:

SPOOL FORM (Round Cross Section)

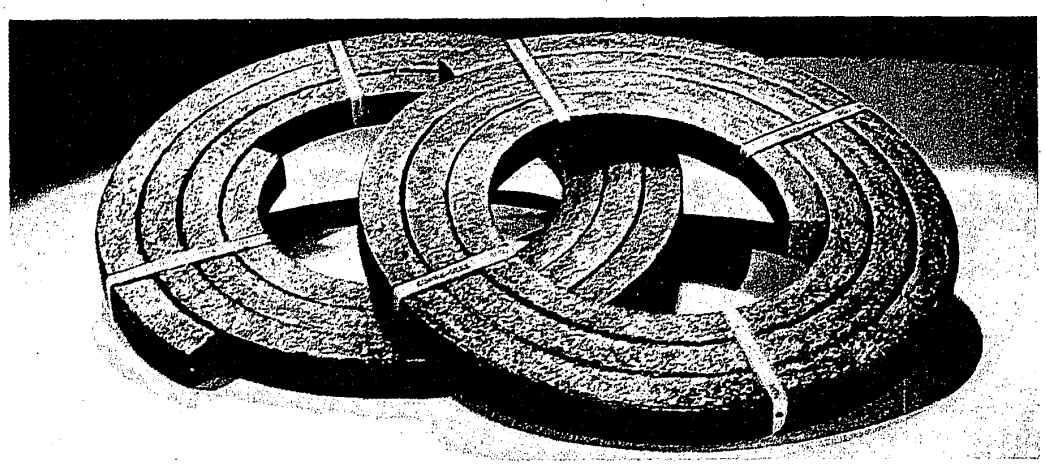
Very convenient for quickly packing valve stems, small rods and shafts. Sizes range from ⅛" through ⅜" in increments of 1/16". Larger sizes have a braided fabric jacket for added strength.

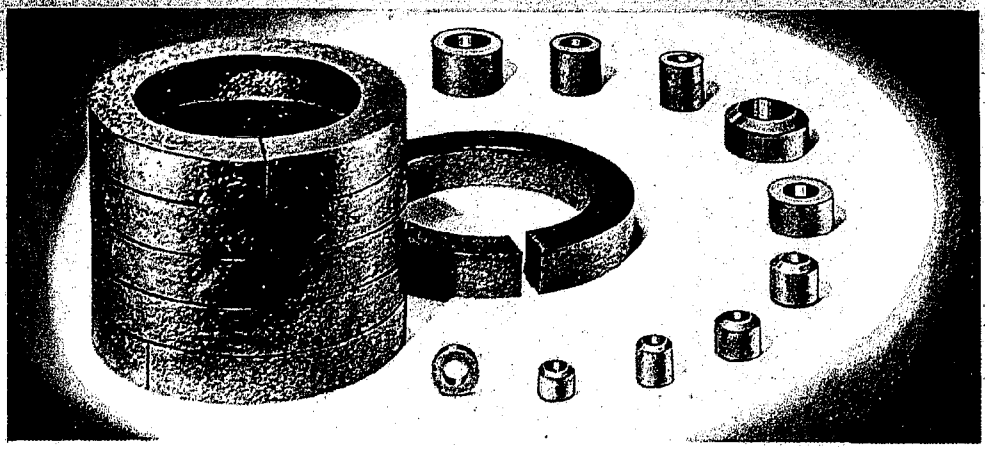
SPIRAL FORM (Rectangular Cross Section)

Especially designed for operating engineers who wish to pack small and medium diameter rods and shafts. Packed in strong, dust-proof boxes. Sizes range from 3/16" through ¾" in increments of 1/16".

COIL FORM (Square Cross Section)

For medium and large diameter shafts, rods and plungers. Packed in flat, dust-proof cans. Sizes range from ⅜" through ⅞" in increments of 1/16".





DIE-FORMED RING AND SETS

Accurately die-formed rings or sets can be furnished to any dimensions. When ordering rings, give diameters and number of rings required. When ordering sets, give diameter of the rod and diameter and depth of stuffing box.

PRODUCTION SETS

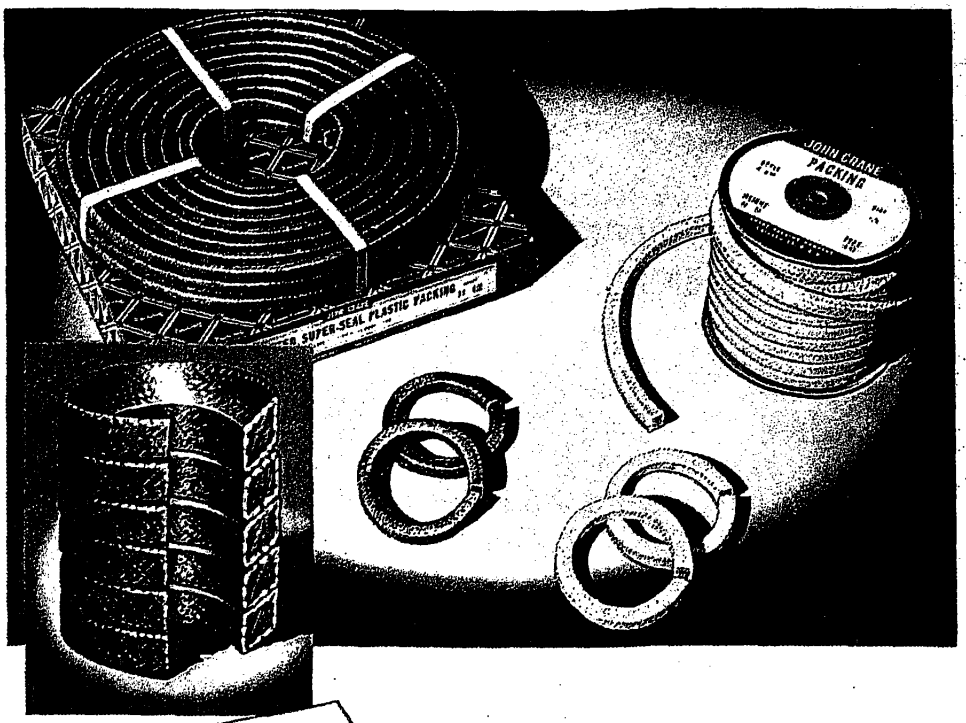
Furnished in endless, one-piece production sets to meet assembly line requirements. Rings may be of any shape to fit all designs of stuffing boxes. When ordering, send blueprint or sketch, together with operating conditions.

Valve Stem	Approximate Feet Per Pound				
Size	No. 1	No. 2	No. 3	No. 4	No. 6
1/8"	60	90	72	—	130
5/32"	54	82	65	—	120
3/16"	35	75	40	70	84
1/4"	24	40	27	35	42
5/16"	13	25	—	20	25
3/8"	19	20	—	17	20

Spiral Form		Approximate Weight Per Box In Pounds					
Size	Feet Per Box	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
3/16"	34	1 1/8*	3/4*	1*	3/4*	3/4*	3/4*
1/4"	26	1 5/8*	1*	1 1/2*	1 1/8*	1*	1 1/8*
5/16"	26	2 1/8*	1 3/8*	2*	1 1/2*	1 1/2*	1 3/8*
3/8"	10 1/2	2 1/4	1 5/8	2	1 3/4	1 1/2	1 1/2
7/16"	15	3 1/4	1 5/8	2 3/8	1 7/8	2	1 5/8
1/2"	19 1/2	4 1/4	3	3 3/4	3 1/8	3	2 1/2
5/8"	19 1/2	6 1/2	3 1/2	6	4	4	3 7/8
3/4"	18	8 3/4	5 7/8	8	4 3/4	4 1/2	4 1/2

Coil Form		Approximate Weight Per Tin In Pounds					
Size	Feet Per Box						
3/8"	55	6 1/2	4	6	4 1/4	5 7/8	3 3/4
7/16"	38	6 1/2	4	6	4	3 3/4	3 1/2
1/2"	36	6 3/4	4	7	4 1/2	4	3 7/8
5/8"	20	5 5/8	3	6 1/4	3 1/2	3 1/8	3 1/2
3/4"	12	5 3/8	2 5/8	5	3 1/8	2 3/4	2 7/8
7/8"	10	5	3 1/8	5 1/8	3 5/8	3 1/4	2 5/8

*Two spirals per box. Larger sizes one spiral per box.



JACKETED SUPER-SEAL PACKINGS

All six styles of Super-Seal shown on the foregoing pages can be furnished with a braided asbestos jacket. The jacket is securely vulcanized to the proper style of Super-Seal. This helps to retain the packing's excellent resilience at higher temperatures. Styles with this type of jacket are designated as 1-J, 2-J, 3-J, 4-J, 5-J and 6-J.

The asbestos yarn in the jacket can be reinforced with monel wire for high pressures. The wire is in the center of each strand and cannot touch moving parts. Styles furnished with this type of jacket are designated as 2-AM, 4-AM and 6-AM.

All styles of Jacketed Super-Seal are thoroughly impregnated with graphite, except for Styles 4-J and 4-AM, which are lubricated with mica.

Sizes range from ⅛" through 1" in increments of 1/16". Sizes ⅛" through ½" are furnished in spools and larger sizes in coils. Die-formed rings or sets can be supplied to required sizes.

Nest-shaped sets can be furnished for special stuffing boxes on turbine inlet and throttle valves.

RECOMMENDED SERVICES:

Style 1-J—Water, gas, ammonia and general service. For temperatures up to 550° F.

Style 2-J—Hot oil, petroleum distillates or steam valves. For temperatures up to 750° F.

Style 2-AM—Services similar to 2-J. For temperatures up to 850° F., pressures to 1500 lbs.

Style 3-J—Pumps and valves handling petroleum products. For temperatures up to 550° F.

Style 4-J—Sanitary services, also steam expansion joints and valves where sleeves and stems are stainless steel. For temperatures up to 750° F.

Style 4-AM — Superheated steam on expansion joints and valves. For temperatures up to 850° F., pressures to 1500 lbs.

Style 6-J — Pumps, valves and expansion joints handling steam, gases and petroleum services. For temperatures up to 750°F. This style is non-metallic.

Style 6-AM—Valves and expansion joints handling superheated steam, hot gases and other non-petroleum services. For temperatures up to 850° F., pressures to 1500 lbs.

CRANE PACKING COMPANY

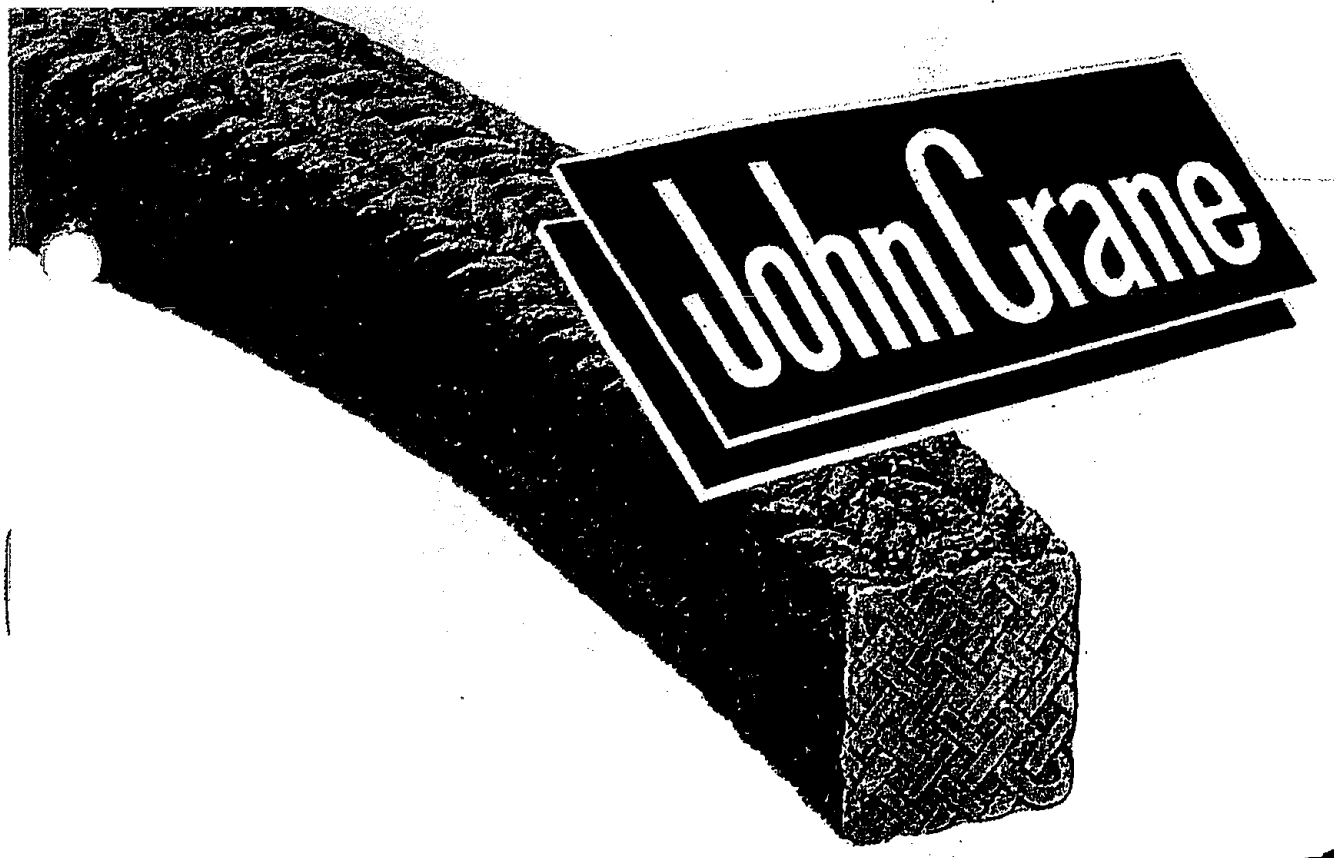
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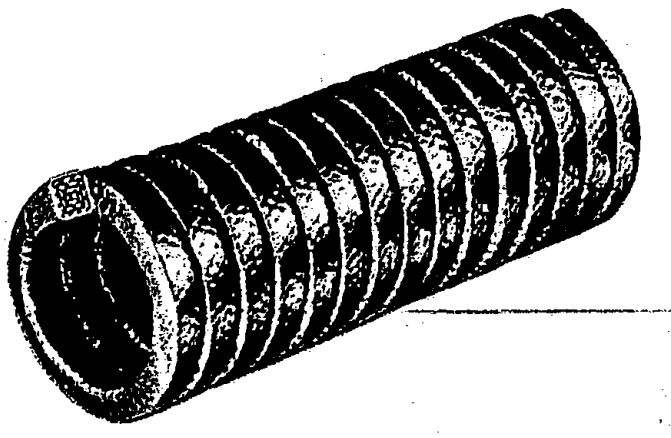
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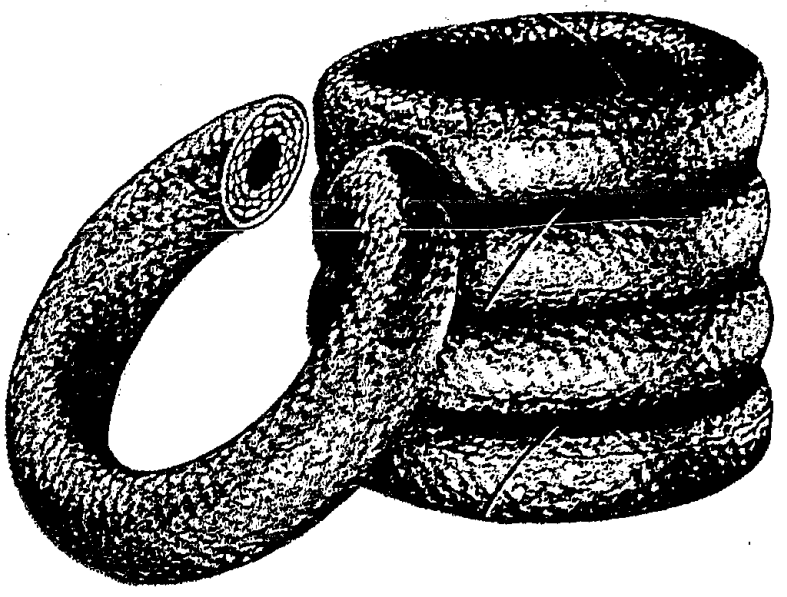
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FABRIC Packings

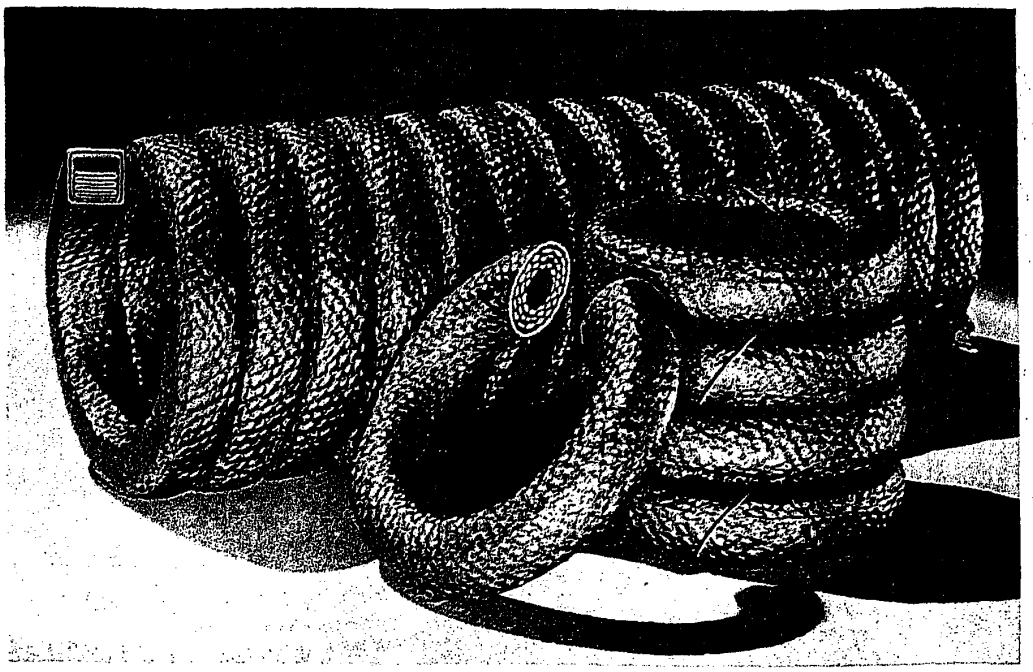
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OFFICES, WAREHOUSES AND SERVICE THE WORLD OVER

HIGH PRESSURE ASBESTOS PACKINGS / STYLES 800 and 802



Style 800—Spirals
(In Ring Form: Style 801)

Style 800 is manufactured of closely woven asbestos cloth treated with a heat-resisting compound as it is rolled and folded around a non-hardening rubber cushion back.[1] A surface coating of graphite is applied.

Style 802—Spirals
(In Ring Form: Style 803)

Style 802 is formed by wrapping layers of high quality asbestos cloth around a resilient rubber core.[2] The cloth is treated with a high temperature resisting compound. A surface coating of graphite is applied.

Recommended Services: Steam, gas and air service in compressors, pumps and other similar equipment.

Style 800 or Style 802 can also be furnished without rubber cushion if desired. Both styles are furnished in 12½ ft. spirals in sizes ¼" through 1" in increments of 1/16". They are also available in ring form to exact specifications.

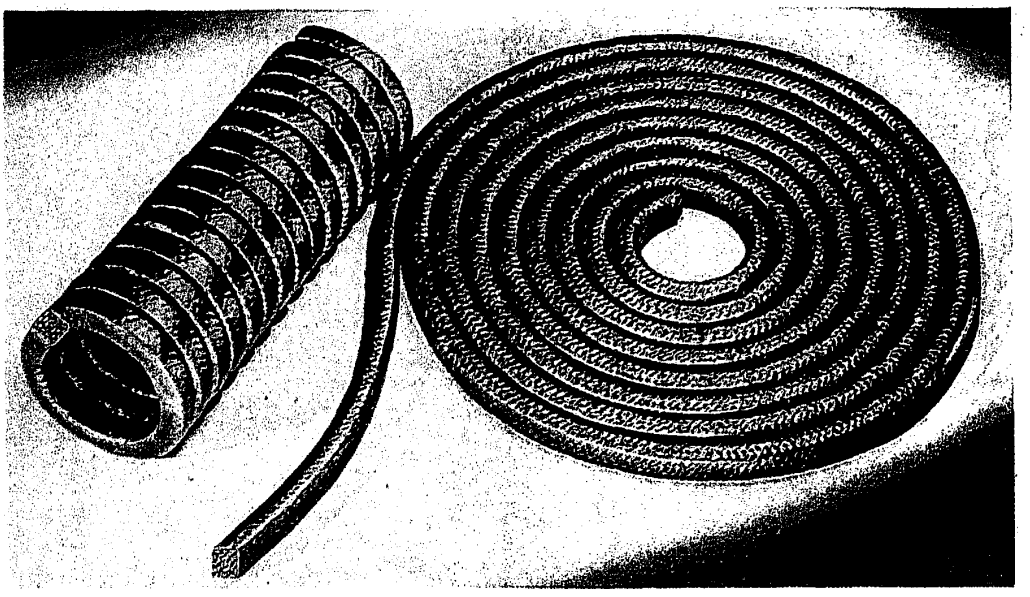
Notes: 1. Sizes ⅜" and smaller are made without rubber backing.
2. Sizes ⅜" and smaller are made without rubber core.

SIZES: STYLES 800-802

Size	Spirals per Box	Feet per Box	Approximate Weight per Box	Size	Spirals per Box	Feet per Box	Approximate Weight per Box
¼"	6	75	4 lbs.	⅝"	2	25	8 lbs.
5/16"	5	62½	4¼ lbs.	1 1/16"	2	25	9 lbs.
⅜"	4	50	5⅜ lbs.	¾"	1	25	9½ lbs.
7/16"	4	50	7 lbs.	1 1/16"	1	25	7¼ lbs.
½"	3	37½	6¾ lbs.	⅞"	1	25	8½ lbs.
9/16"	2	25	5⅜ lbs.	1"	1	25	10½ lbs.

When ordering die-formed rings or sets, specify diameter of rod and inside diameter and depth of box or number of rings desired.

BRAID OVER BRAID ASBESTOS PACKINGS / STYLES 804 • 804-D 804-M and 804-MD



Style 804—Spools and Coils
(In Ring Form: Style 805)
Style 804-D—Spools and Coils
(In Ring Form: Style 805-D)

Style 804 is manufactured from long-fiber Canadian asbestos yarn by the braid-over-braid method. Each strand of yarn is impregnated with a heat-resisting lubricant and graphite, resulting in a soft and pliable packing.

Recommended Services: General service on valves and piston rods of pumps handling steam, air, gas and mild chemicals.

Style 804-D is of the same construction as Style 804, except that each strand of the asbestos yarn is treated with a synthetic oil-proof binder for handling petroleum distillates and impregnated with dry graphite.

Recommended Services: Hot oil pumps, refinery control valves, gasoline pumps and other services where an oil-proof packing is required.

Style 804-M—Spools and Coils
(In Ring Form: Style 805-M)
Style 804-MD—Spools and Coils
(In Ring Form: Style 805-MD)

Style 804-M is manufactured by the braid-over-braid process from pure long-fiber Canadian asbestos yarn with a monel wire insert. Each strand is impregnated with a special lubricant, resulting in a strong, pliable, heat-resistant and highly resilient packing.

Recommended Services: Valve stems or expansion joints handling high temperature and high pressure steam, air, gas, cresylic acid and many other chemicals.

Style 804-MD is similar to Style 804-M in construction, except that each strand of the asbestos is treated with a synthetic oil-proof binder. This packing has extremely high tensile strength.

Recommended Services: Extremely high temperature oil, hard steel plungers, valves and expansion joints. Also hot tar and asphalt pumps.

SIZES: STYLE 804

1-LB. SPOOLS	
Size	Ft. per spool
1/8"	100
3/16"	41
1/4"	26
5/16"	16
3/8"	12
7/16"	8
1/2"	7

5-LB. SPOOLS	
Size	Ft. per spool
1/8"	500
3/16"	205
1/4"	130
5/16"	80
3/8"	60
7/16"	40
1/2"	35

COILS		
Size	Approx. ft. per lb.	Approx. ft. per coil
5/16"	5.6	63

Spool wts. are approximate.

SIZES: STYLE 804-D

1-LB. SPOOLS	
Size	Ft. per spool
1/8"	100
3/16"	39
1/4"	24
5/16"	16
3/8"	11
7/16"	8
1/2"	7

5-LB. SPOOLS	
Size	Ft. per spool
1/8"	500
3/16"	195
1/4"	120
5/16"	80
3/8"	55
7/16"	40
1/2"	35

COILS		
Size	Approx. ft. per lb.	Approx. ft. per coil
5/16"	6.2	63

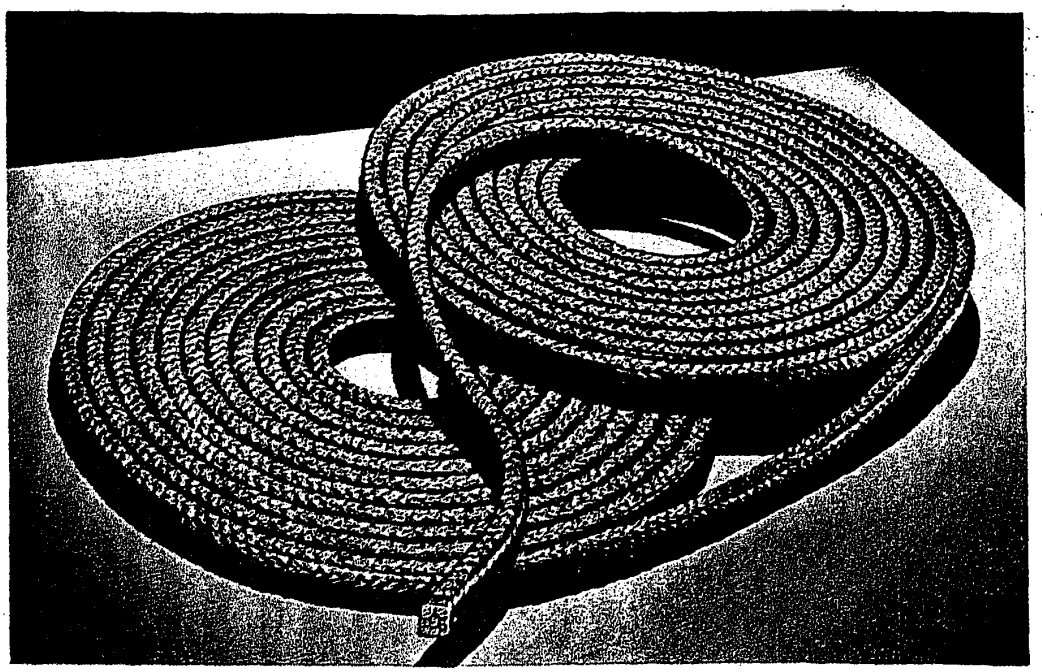
Spool wts. are approximate.

SIZES: STYLES 804-M and 804-MD

Spool Form—1/8" through 1/2" in 1/16" increments. Average wt. per spool 6 to 8 lbs.
Coil Form—5/16" through 3/4" in 1/16" increments. Average wt. per coil 10 to 14 lbs.

When ordering die-formed rings or sets, specify diameter of rod or shaft and inside diameter and depth of box or number of rings desired.

SQUARE BRAIDED ASBESTOS PACKING / STYLES 810 and 810-W



Style 810—Spools and Coils
(In Ring Form: Style 811)

Style 810-W—Spools and Coils
(In Ring Form: Style 811-W)

Style 810 is manufactured from the finest Canadian asbestos yarns by the plaited-braid method. A high flash point lubricant and graphite is impregnated in each strand as it is braided, resulting in a soft, resilient packing that reduces friction to a minimum.

Recommended Services: Centrifugal or rotary pumps handling hot or cold water, cold oils, caustic solutions and weak acids.

Style 810-W is manufactured from the finest Canadian asbestos yarns with brass wire inserted. Each strand of asbestos is lubricated with a high flash point oil and treated with graphite. This packing has a high tensile strength.

Recommended Services: Reciprocating, hard steel rods or plungers handling hot or cold oil, caustic solutions and weak acids.

SIZES: STYLE 810

1-LB. SPOOLS		5-LB. SPOOLS		COILS		
Size	Ft. per spool	Size	Ft. per spool	Size	Approx. ft. per lb.	Approx. ft. per coil
1/8"	91	1/8"	455	9/16"	4.9	63
5/32"	46	5/32"	230	5/8"	4.4	58
1/4"	26	1/4"	130	11/16"	3.5	50
5/16"	16	5/16"	80	3/4"	2.7	44
3/8"	11	3/8"	55	13/16"	2.4	42
7/16"	8	7/16"	40	7/8"	2.02	40
1/2"	6	1/2"	30	15/16"	2.88	37
				1"	1.67	34

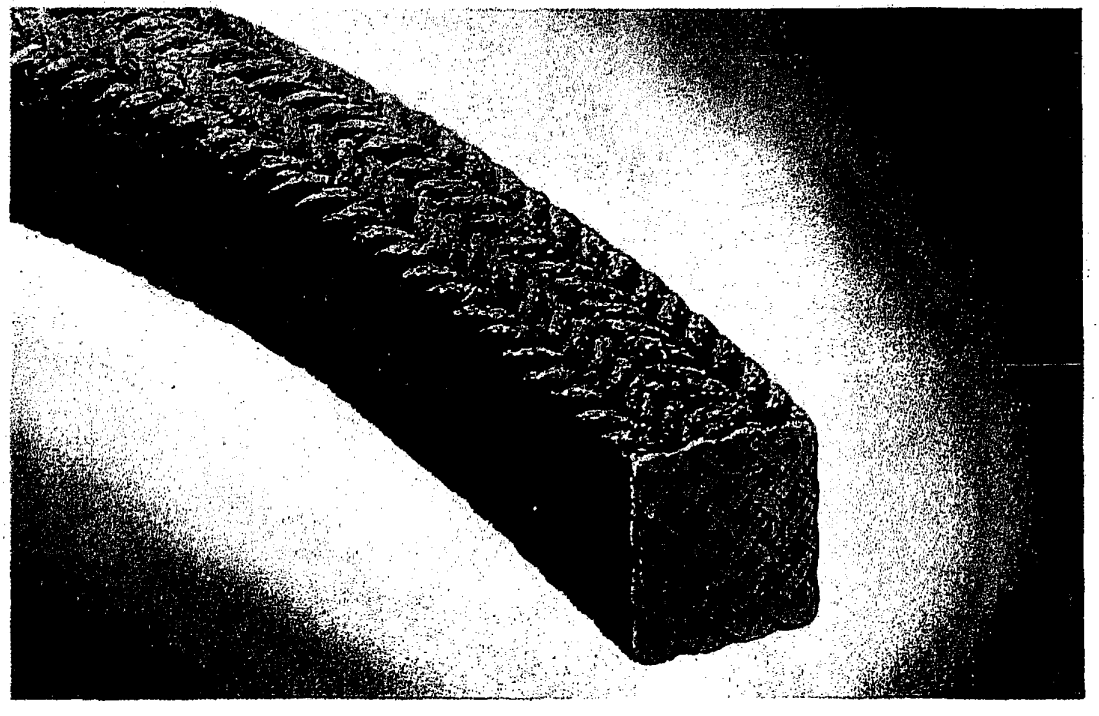
Spool wts. are approximate.

SIZES: STYLE 810-W

Spool Form—1/8" through 1/2" in 1/16" increments. Average wt. per spool 7 to 9 lbs.
Coil Form—9/16" through 1" in 1/16" increments. Average wt. per coil 12 to 19 lbs.

When ordering die-formed rings or sets, specify diameter of rod or shaft and inside diameter and depth of box or number of rings desired.

INTERLACED ASBESTOS PACKING / STYLE 5810



Style 5810—Spools and Coils

Style 5810 interlaced asbestos packing is a uniformly dense packing fabricated by interlacing long-fiber asbestos yarn. Each yarn is thoroughly impregnated with a special high flash point lubricant and graphite. After interlacing, the packing is treated on the outside with lubricant and graphite.

Recommended Services: Hot or cold water, brine, oils, mild caustics, solvents, acids and many general chemicals. Suitable for medium to high pressure applications. Ideal for rotary shafts on equipment such as mixers, agitators, centrifugal and rotary pumps. Also excellent for use as a valve stem packing.

INTERLACED CONSTRUCTION ADVANTAGES

1. Greater flexibility than other braided packings—because the yarns pass diagonally through the packing. Large cross section packing can be formed into small diameter rings without buckling the I.D. or distorting the O.D.
2. Longer service life—because the interlaced construction remains intact even if individual yarns on the I.D. wear away.
3. Uniform density throughout the packing—greater number of corner and center warps results in even distribution of yarns.
4. Smoother wearing surface and smaller surface interstices—the result of tighter construction with each yarn locked into the basic structure.
5. Maximum resilience—provided by the uniform construction of the packing.
6. Less gland adjustment—the flexibility and density of interlaced construction provides longer service with less attention.

SIZES

1-LB. SPOOLS

Size	Ft. per spool
¼"	26
5/16"	16
⅜"	11
7/16"	8
½"	6

5-LB. SPOOLS

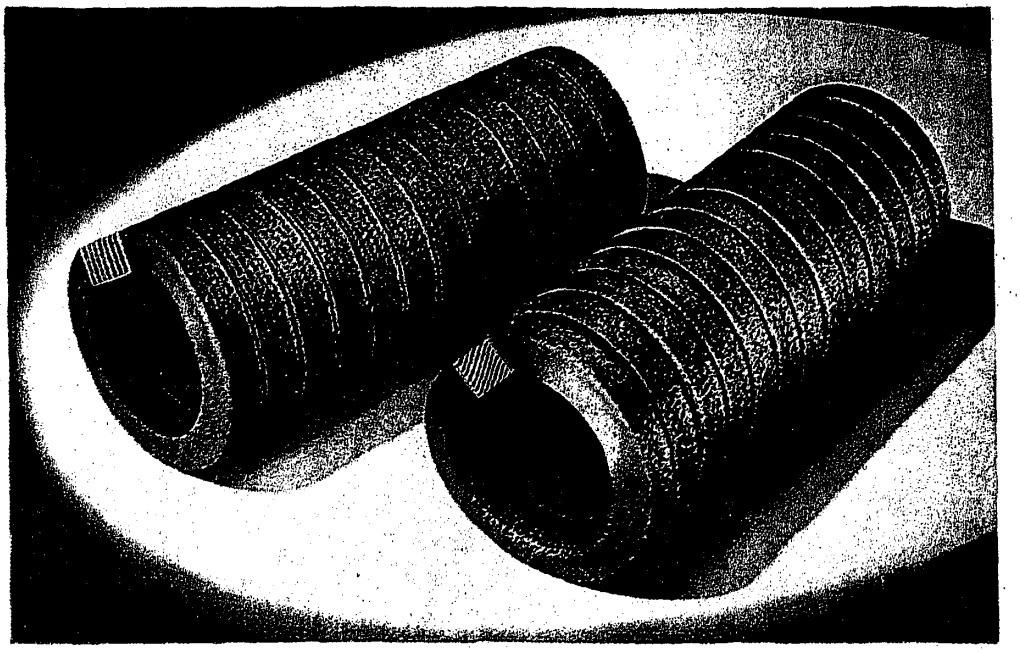
Size	Ft. per spool
¼"	130
5/16"	80
⅜"	55
7/16"	40
½"	30

COILS

Size	Approx. ft. per lb.	Approx. ft. per coil
5/16"	5	65
⅜"	4	60
1 1/16"	3.3	50
¾"	2.6	45

Spool wts. are approximate.

When ordering die-formed rings or sets, specify diameter of rod or shaft and inside diameter and depth of box or number of rings desired.



Style 832—Spirals (Plain)
(In Ring Form: Style 833)

Style 832 is manufactured from closely woven duck, built up layer upon layer. It is frictioned with a heat-resisting rubber compound and the finished packing is graphited and lubricated. This packing can also be furnished ungraphited and unlubricated when specified.
Recommended Services: Rods or valve stems handling low or medium pressure steam, water or ammonia.

Style 835 is constructed of closely woven duck plies at a 45° angle with the rod, frictioned with a heat-resisting rubber compound and finished with a suitable rubber cover, top and bottom. The finished packing is lubricated and graphited.
This packing is designed to permit maximum expansion. It is highly efficient when used on rods or plungers that are slightly out of line or are subject to vibration.
Recommended Services: Rods or valve stems handling low or medium pressure steam, water or ammonia.

Style 835—Spirals (Cross Expansion)
(In Ring Form: Style 836)

Sectional Rings (Style 834) can be furnished if desired.

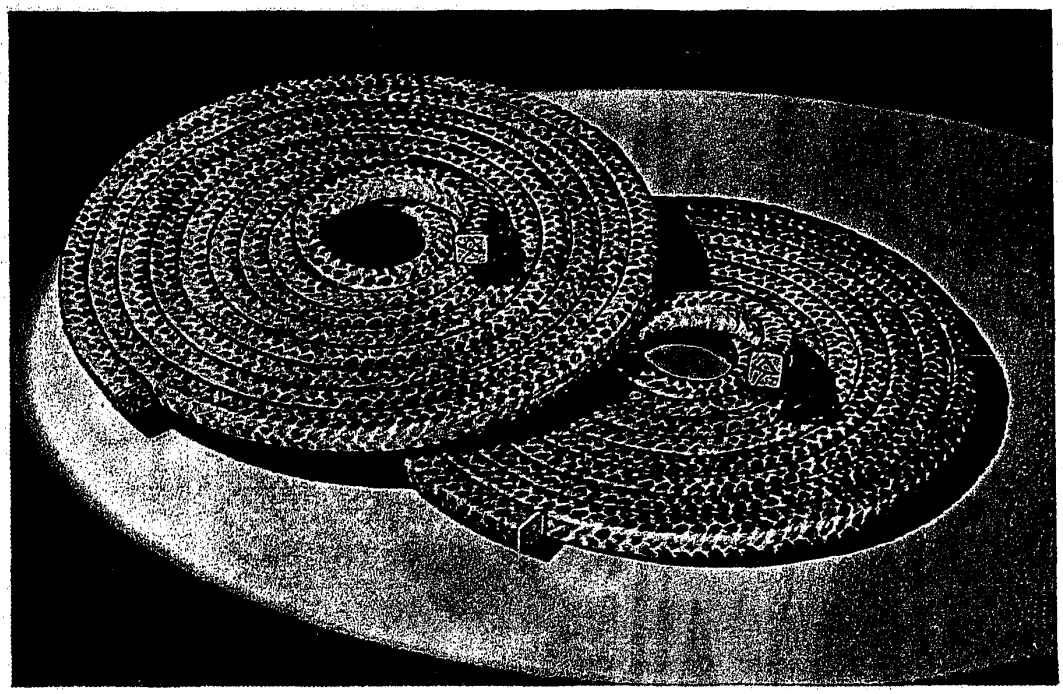
SIZES: STYLES 832-835

Size	Feet per Box	Approximate Weight per Box	
		832	835
¼"	25	1 lb.	1 lb.
⅜"	12½	1½ lbs.	1½ lbs.
½"	12½	2 lbs.	2½ lbs.
⅝"	12½	3 lbs.	4¼ lbs.

Size	Feet per Box	Approximate Weight per Box	
		832	835
¾"	12½	4 lbs.	5⅜ lbs.
⅞"	12½	5½ lbs.	5 lbs.
1"	12½	8½ lbs.	8½ lbs.

When ordering die-formed rings or sets, specify diameter of rod or shaft and inside diameter and depth of box or number of rings desired.

SQUARE BRAIDED FLAX AND JUTE PACKINGS / STYLES 861·863 864 and 865



Style 861—Flax (Waterproof Hydraulic): manufactured from the longest fiber imported flax roving, carefully selected and braided square by the plaited-braid method. It is thoroughly impregnated with a special waterproof lubricant and surface graphited.
Recommended Services: High pressure hydraulic services such as rams, accumulators, hydraulic pumps, elevator plungers and outside packed pumps handling cold water or cold oil.

Style 863—Flax: manufactured from pure, medium length flax, braided square by the plaited-braid method and thoroughly lubricated with a pure tallow compound.
Recommended Services: Medium pressure hydraulic and cold water conditions.

Style 864—Flax and Jute: manufactured from medium length flax and jute fibers, braided square by the plaited-braid method and lubricated with a regular flax lubricant.
Recommended Services: Low pressure general hydraulic conditions.

Style 865—Jute: manufactured from carefully selected white Indian jute roving by the plaited-braid method and lubricated.
Recommended Services: All hydraulic and cold water conditions where a jute packing is generally used.

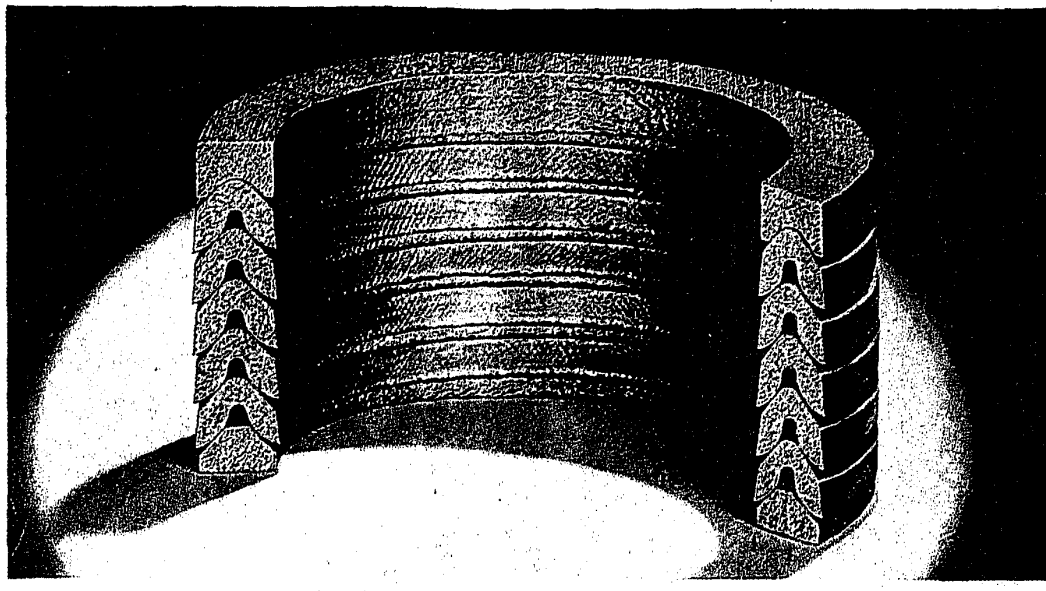
Note: Flax packings Styles 863, and 864 can be furnished with an outside coating of graphite, if desired.

SIZES

Spool Form—⅛" through ½" in 1/16" increments. Average wt. per spool 5 lbs.
Coil Form—3/16" through 3" in 1/16" increments. Average wt. per coil 9 to 15 lbs.

When ordering die-formed rings or sets, specify diameter of rod or shaft and inside diameter and depth of box or number of rings desired.

EVERSEAL V PACKINGS



Everseal "V" Packing is recommended for sealing in reciprocating motion applications such as plunger pumps, hydraulic and pneumatic cylinders and press rams. It has a distinctive design which insures automatic sealing action on high or low pressures. The illustration above shows the pressure chambers between every ring. Each chamber does its share in breaking down the total pressure. The flexible lips are automatically forced against the rod or cylinder on the pressure stroke but are released on the return stroke, thus reducing friction.

Everseal "V" Packings are manufactured by carefully folding cotton duck cloth or asbestos cloth frictioned with a synthetic rubber binder to the required size. This pre-form is precision molded and vulcanized under heat and pressure to form the proper size rings. The following styles are available:

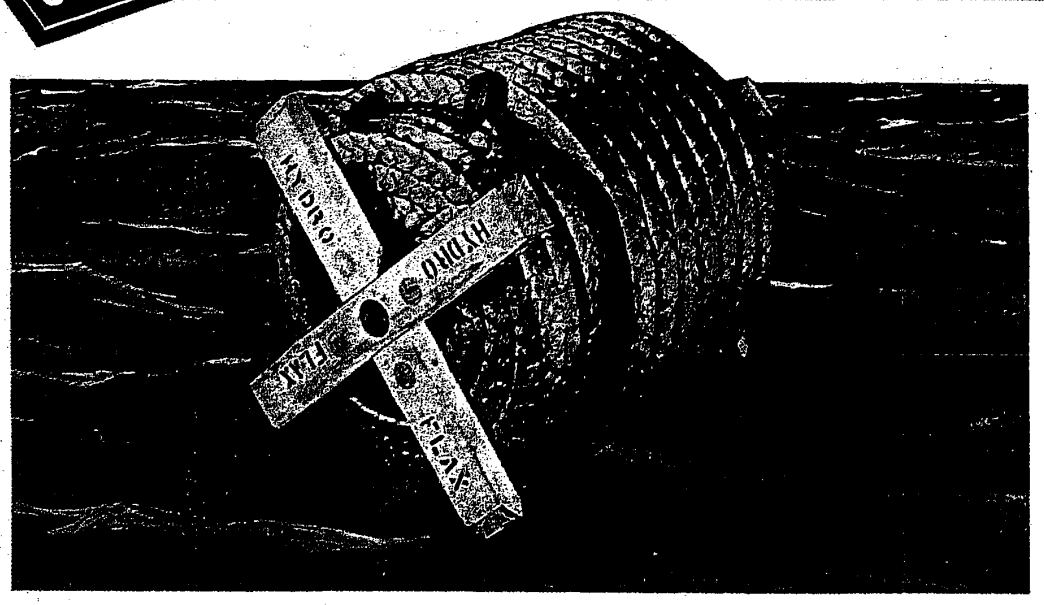
FABRIC REINFORCED MATERIALS

STYLE	MATERIAL	MAXIMUM SERVICE TEMP.	GENERAL RECOMMENDATIONS
821	Neoprene and cotton duck.	250°F.	Mineral base hydraulic oils and air. Hydraulic and pneumatic cylinder service.
824	Neoprene and asbestos cloth.	350°F.	Hot oil service.
829	Buna-N and cotton duck.	250°F.	Mineral base oils, gasoline, kerosene, fuel oil, water and water emulsion hydraulic fluids.
830	Buna-N and asbestos cloth.	300°F.	Hot mineral base oils, fuels, and gasoline.
820	Buna-S and cotton duck.	250°F.	Hot or cold water, water glycol hydraulic fluids, brine and aqueous ammonia. Not suitable for mineral base oils.
823	Buna-S and asbestos cloth.	350°F.	Hot water and steam, boiler feed service.
930	Butyl and cotton duck.	250°F.	Phosphate ester fire-resistant hydraulic fluids. Cannot be used with petroleum base oils.

Note: A complete line of piston cups, U-cups and flange or hat packings are also manufactured from the same materials shown above. For design data and specifications see Hydraulic Packings Bulletin No. P-333.

Printed in U.S.A.

John Crane



HYDRO-FLAX MARINE SERVICE PACKING / STYLE 866

Style 866 is fabricated from the finest quality long-fiber flax, free from jute, hemp and other type fibers. It is manufactured by the plaited-braid method and is graphited and uniformly impregnated with a high temperature lubricant.

Sizes: ¼" through 2" in spools, coils or on reels.

Recommended Services: Stern tubes, large water wheel shafts and general water service, either salt or fresh. The high lubricating qualities of this packing reduce wear and friction to a minimum.

ASBESTOS WICK PACKING / STYLE 880

Style 880 Packing is manufactured from unlubricated long-fiber asbestos strands spun into roving. Each strand can be easily separated for use when a smaller size is desired.

Packaged in ½-lb., 1 and 2-lb. balls or 25 and 50-lb. reels. Sizes: ¼" and ⅜".

Recommended Services: Valve stems on hot water and ordinary low pressure heating systems.

ASBESTOS ROPE PACKING / STYLE 881

Style 881 is manufactured from several strands of unlubricated long-fiber asbestos wick and firmly twisted into a uniform rope of the desired size. Furnished on 25-lb. reels. Available in sizes ¼" and up in increments of ⅛".

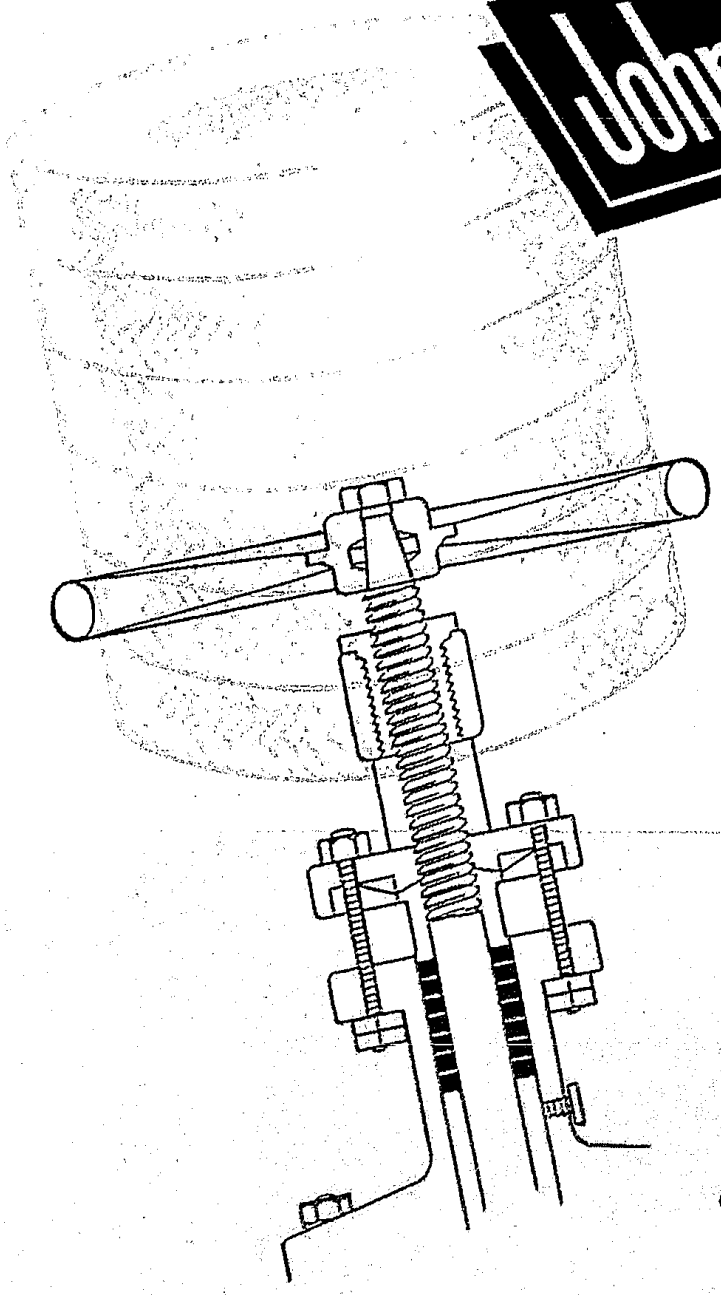
Can be furnished with an asbestos jacket when specified.

Recommended Services: Insulating steam and exhaust lines, furnace door and groove packing and caulking bubble tower decks in refinery service.

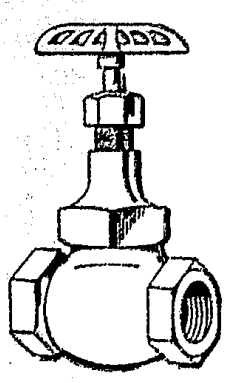
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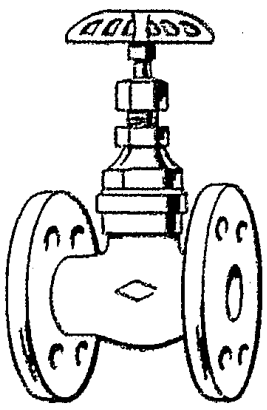
CRANE PACKING COMPANY
6400 OAKTON STREET, MORTON GROVE, ILLINOIS 60053
PLANTS IN: Canada, Mexico, Brazil, England, Australia and Japan

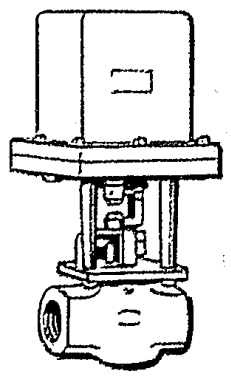
John Crane



VALVE STEM PACKINGS







John Crane

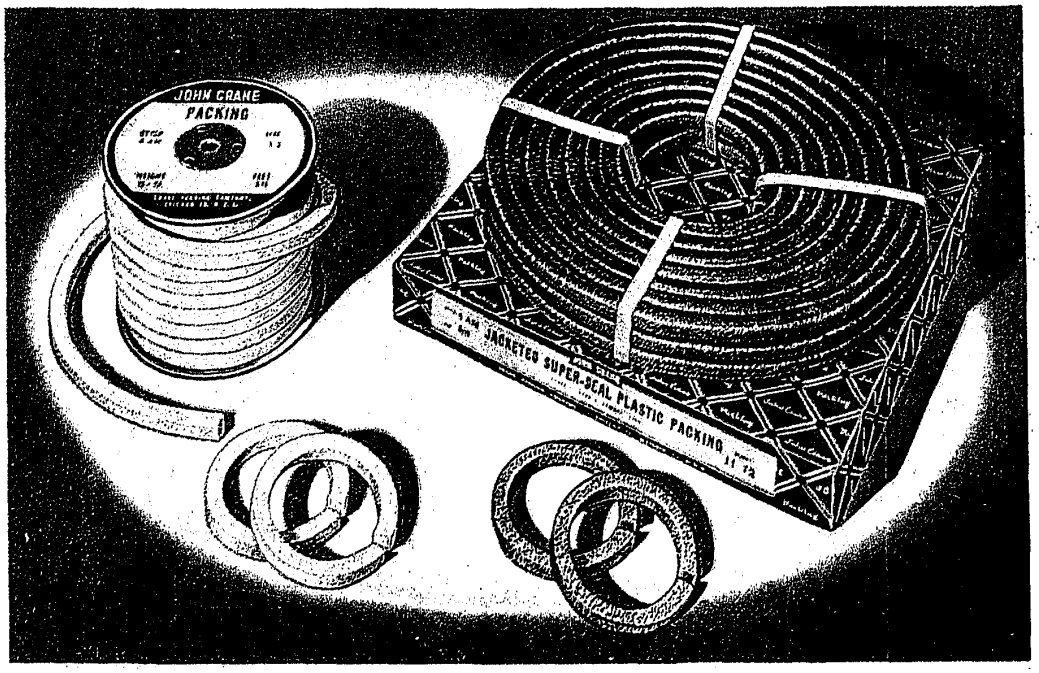
CRANE PACKING COMPANY

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In Mexico: Industrias John Crane de Mexico, S.A. • Poniente 152 #678 Industrial Vallejo, Mexico, D.F.
In Brazil: John Crane Industria E Comercio, Ltda. • Avenida Jurubatuba 600, Sao Bernardo do Campo, S.P.
In Australia: John Crane Mauri Pty., Ltd., 166 Eldridge Road, Bankstown, New South Wales, Australia
In Europe: Crane Packing Ltd., Slough, Bucks, England
In Japan: John Crane Japan, Inc., No. 5, Tenjinbashi-suji 6-chome, Oyodo-ku, Osaka 531, Japan

OFFICES, WAREHOUSES AND SERVICE THE WORLD OVER

VALVE STEM PACKINGS



FOR SUPERHEATED STEAM

Style 177-AI for temperatures up to 1200° F.—Constructed of a closely braided asbestos yarn top jacket reinforced with inconel wire. The core consists of long fiber asbestos and flake graphite to reduce friction to a minimum. Available in spools or die-formed rings. Rings are available with either square cross section or with special bevels for concave-convex nest sets.

Recommended Services: Extreme service conditions in high temperature valves, soot blowers, gauge glass fittings and similar applications. The packing withstands pressures to 2000 psi, and remains resilient at temperatures to 1200° F.

Style 6-AM for temperatures up to 850° F.—Manufactured by braiding a jacket of the purest asbestos yarn, with a monel wire insertion around a resilient, non-metallic plastic asbestos core. The packing is impregnated throughout with anti-frictional, dry graphite lubrication. It requires minimum adjustment of the gland and provides easy stem operation. Can also be furnished without wire insert.

Recommended Services: High pressure, superheated steam valves.

Style 4-AM for temperatures up to 850° F.—Manufactured in the same manner as Style 6-AM, except that it is mica lubricated and the core is a non-graphited, white asbestos plastic. It can also be furnished without wire insert.

Recommended Services: High pressure, superheated steam valves where the presence of graphite is detrimental.

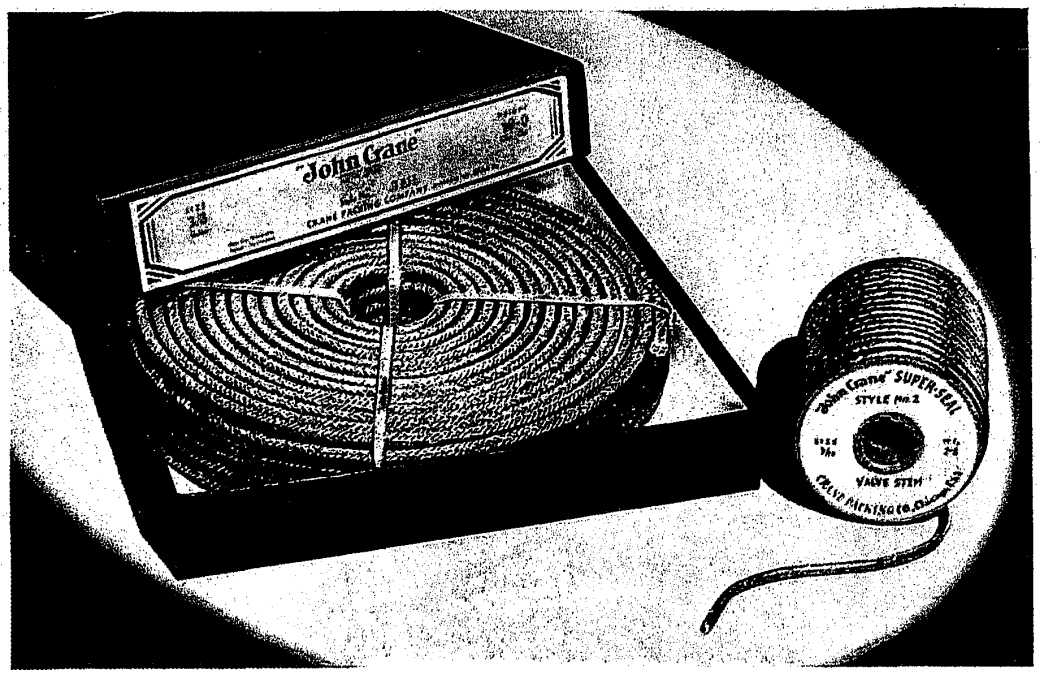
FOR SATURATED STEAM

Style 1-J for temperatures up to 550° F.—Manufactured by braiding a jacket of asbestos yarn around a resilient plastic asbestos core of Super-Seal No. 1 (See Bulletin No. P-390.) The jacket is securely vulcanized to the core and is thoroughly impregnated with anti-frictional dry graphite lubrication. Style 1-J has the tensile strength to withstand high pressures and requires minimum adjustment of the gland.

Style 800 for temperatures up to 550° F.—Manufactured by rolling closely woven asbestos cloth around a cushion of rubber. A sturdy, durable and resilient packing.

Style 804 for temperatures up to 550° F.—Consists of braid-over-braid asbestos with each strand impregnated with a heat-resistant lubricant and graphite for softness and pliability.

VALVE STEM PACKINGS



FOR HOT OIL

Super-Seal No. 2-J for temperatures up to 750° F.—Made by braiding an oil-proof jacket of purest asbestos yarn around an oil-proof high temperature plastic asbestos core. Packing performs with a minimum of gland pressure, has high tensile strength and is recommended for hot oil, tar and many other viscous liquids. (See Bulletin No. P-390.)

Super-Seal No. 2 for temperatures up to 750° F.—Consists of synthetic oil resistant binder, graphite and special long fiber asbestos.

This packing is often used with Style 101-AL aluminum foil (Bulletin No. P-389) or 804-D braided asbestos (see below) as end rings. These combinations are equally satisfactory on high or low pressures.

See also Style 177-AI on page 2 and Styles 187-I and 187 on pages 4 and 5 of this bulletin.

FOR PETROLEUM DISTILLATES

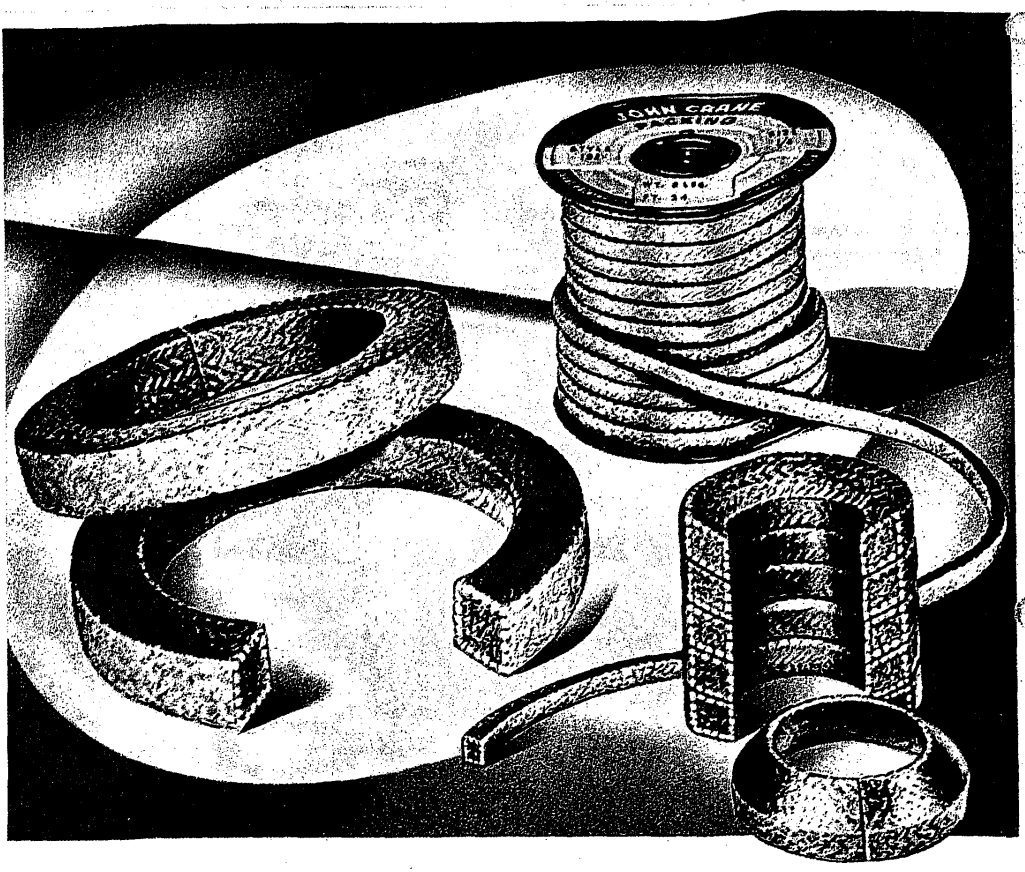
Style 804-D for temperatures up to 600° F.—Manufactured from long-fiber Canadian asbestos yarn by the braid-over-braid method. Each strand is treated with synthetic oil-proof binder and impregnated with dry graphite.

SIZES

All packings on pages 2 and 3 range in sizes from ⅛" through 1" in increments of 1/16". Sizes ⅛" through ½" are furnished on spools and larger sizes in coils. Die-formed rings or sets can be supplied to required sizes.

VALVE STEM PACKINGS

(CORROSION PREVENTIVE)



Styles 187-I and 187 Packings* prevent pitting of 410 and 416 chrome steel stems during valve storage. They contain no free sulphur and employ a special sacrificial metal that effectively sidetracks the electrolytic action generated after hydrostatic tests until valve is placed in service—the action that attacks the chrome content of the stem. Being first consumed, this metal serves as a "buffer" against corrosion for a period of time well beyond normal storage requirements. Since this sacrificial metal is strictly an additive, its consumption in no way impairs packing effectiveness.

These packings are especially suited for high temperature service as they contain no rubberized material to harden and no volatile material to cause packing shrinkage. Even at high temperature limits, the packings remain soft, flexible and resilient and always easily controlled by gland adjustment.

*Patented

VALVE STEM PACKINGS

(CORROSION PREVENTIVE)

Style 187-I is braided of strong, highest quality pure asbestos yarn with an Inconel wire insert around a resilient asbestos core impregnated with graphite. Lubricated throughout and completely surfaced with anti-frictional dry graphite lubricant that is far superior to mica, it requires minimum gland adjustment and provides easy stem operation. Style 187-I is especially recommended for stuffing box temperatures up to 1200° F.

Style 187 is of the same construction as Style 187-I but has a Monel wire insert for stuffing box temperatures up to 850° F.

Recommended Services: Valve stems, rods and expansion joints in air, water, steam, mineral oil or liquefied petroleum service.

Styles 187-I and 187 are available in several forms to meet all service and stem size requirements. They can be die-formed to any size required to fit square or beveled end stuffing boxes or are available in spool form or nested ring sets. When ordering, specify stem diameter and box diameter and depth of stuffing box or number of rings required; also whether box has square or beveled ends. (If beveled ends are required state degree of angle.)

SPOOL AND COIL SIZES

SPOOLS			COILS		
Size	Approx. Ft. Per Lb.	Approx. Lbs. Per Spool	Size	Approx. Ft. Per Lb.	Approx. Lbs. Per Coil
1/8"	71.1	10	9/16"	5.2	13 1/2
3/16"	36.4	10	5/8"	4.7	16
1/4"	20.6	9	11/16"	3.9	18
5/16"	14.4	8 1/4	3/4"	3.2	19 1/2
3/8"	10.1	8 1/4	13/16"	3	20
7/16"	8.9	7 3/4	7/8"	2 3/4	20
1/2"	5.8	6 1/2	15/16"	2 1/2	20
			1"	2	20