

FILE NAME: Garlock (GAR)

DATE: 1981

DOC#: GAR040

DOCUMENT DESCRIPTION: Journal Articles RE Asbestos-free Gaskets

BLUE-GARD™ makes the news!



Acrylic gasketing matches asbestos' performance

The use of asbestos in sealing applications is becoming more and more expensive as federal regulations concerning its use increase and grow more complex. Many employers are also expressing concern that employee morale and productivity are jeopardized by the health concerns surrounding asbestos.

Garlock Inc.'s Mechanical Packing Div. has developed what they see as a viable alternative to asbestos gasketing. In laboratory and field testing under service conditions, Blue-Gard compressed gasketing has proved that it has sufficient chemical resistance to prevent change in its physical properties, does not contaminate the fluid being handled, does not promote corrosion of flanges, and is capable of withstanding bolt pressure without crushing or undergoing excessive plastic flow. In addition, the gasketing

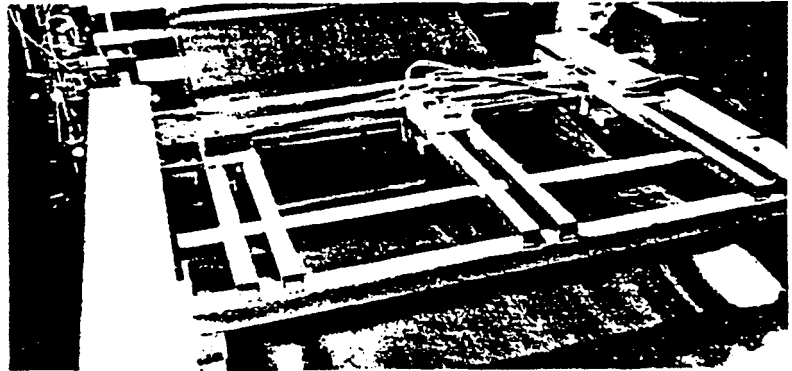
has been successfully tested in over 100 industrial applications.

The gasketing is made of acrylic fiber combined with a nitrile rubber binding that reportedly is deformable enough to distribute pressure evenly over surfaces. It also has an elasticity that enables it to maintain an adequate portion of a load when joint movements are not fully eliminated.

The gasketing is manufactured using the traditional sheeting method, and is available in four thicknesses: 1/32, 1/16, 1/8, and 1/4 in., and in sheet sizes of 60 × 60 in. or 60 × 120 in. It can withstand pressures of 600 psi or temperatures to 700F.

For more information, circle number 264 on the Reader Service Card.—Garlock Inc., Mechanical Packing Div.

(continues on p. 88)



Power, January 1981

Nonasbestos gasket meets asbestos specs

New line of nonasbestos gasketing seals as effectively as asbestos in most applications. Called Blue-Gard, the gasketing is composed of acrylic fiber and a nitrile-rubber binder. Manufactured by the traditional sheeting method, the material meets most of the ASTM F 104 specifications for compressed asbestos gasketing. Physical properties include maximum leakage of 0.8 ml/in., compressibility of 7 to 17% and minimum recovery of 40%. The material resists fluids of pH 1 to 11. Sheets are available in thicknesses of 1/32, 1/16, 1/8, 3/32, and 1/4 in., sheet sizes are 60 × 60 in. and 60 × 120 in. Garlock Mechanical Packing Div., 1666 Division St., Palmira, N.J. 08052

Circle 599



TECHNOLOGY DEVELOPMENT NEWS FROM AROUND
New Orleans, LA. ... Babcock & Wilcox announced recently it has successfully burned a new coal-and-water slurry called Co-Al. The high solid slurry, containing 71 percent eastern bituminous coals, can be transported like a liquid fuel and burned without any expensive dewatering. **Palmyra, NY.** ... Garlock's Mechanical Packing Division spent two years on a research project to develop a nonasbestos gasketing material which would seal as effectively as asbestos in most applications. The result is Blue-Gard which goes on the market this month. It should eliminate the need for industry to meet the rigid and expensive government standards that are applicable to the use of asbestos. The material is said to possess all of the properties which make white asbestos good for gasketing purposes. Blue-Gard is composed of an acrylic fiber and nitrile rubber binder. Circle 353 for details.
Everett, MA. ... Avco Everett Research Laboratory and Ebara Corporation of Japan have signed a cross-licensing agreement covering the so-called E-Beam dry scrubber. The system uses an electron beam to irradiate flue gas which has been treated with ammonia. The single process

POLLUTION ENGINEERING

1/81

New Gasket Material KOs Asbestos

More and more, asbestos materials are becoming environmentally, and therefore commercially, taboo. Although a number of brake pad manufacturers have knocked asbestos out of their acts, no gasket manufacturer has announced a compressed sheet substitute until now.

"Blue-Gard can replace asbestos sheet in 85-95% of all applications," claims Roy Whittaker, director of engineering, Mechanical Packing Div., Garlock Inc., Palmyra, NY.

Blue-Gard, a compressed non-asbestos sheet is composed of acrylic fiber combined with a nitrile binder. The binder is typical of asbestos sheet.

Whittaker says the gasketing material is now being tested in at least 30 field applications, including engine and exhaust areas. The material may have problems meeting high swell require-

(Continued)

Automotive Industries 1/81

ments (like in some off-highway uses) and strong acids.

But Whittaker points out that one supplier tested Blue-Gard in sulphuric acid. "It passed with results similar to our best compressed asbestos," adds Whittaker. With a second generation material Garlock plans to take care of high-acid applications too.

Blue-Gard costs 15% more than Garlock's premium grade. Nevertheless, says Whittaker, "We feel we will be very competitive with this." Although acrylic is considerably more expensive than asbestos, the cost of meeting government regulations for asbestos fiber narrow the cost margin.

According to Whittaker, at least one major U.S. automaker and one off-highway OEM want to eliminate all handling of asbestos by their workers. For this reason, as well as for cost considerations, Garlock intends to be completely out of the compressed asbestos market by December 31, 1981. It has also announced plans to place more emphasis on original equipment markets.

—Jennifer M. George

Compressed Asbestos-Free Gasketing

Ten-page brochure with six additional information sheets presents information on a compressed asbestos-free gasketing material said to seal as effectively as asbestos in most applications. The material is designed for use with temperatures to 700 F and is available in thicknesses to 1/4 in. and sheet sizes of 60 x 60 and 60 x 120 in. Technical data and information on federal regulations governing the production and use of materials containing asbestos are included. Mechanical Packing Div., Garlock.

Circle 106 on Post Card

Plant Engr 1/22/81



Non-asbestos gasketing. Catalog GSK-300, 8 pp. Contains a comparison chart that shows up the advantages of Blue-Gard compressed gasketing over compressed asbestos, citing ASTM test method, physical properties and typical data.

Garlock

Circle 432

Design Engr 2/81

Nonasbestos gasketing

Blue-gard compressed nonasbestos gasketing eliminates problems in meeting OSHA and EPA asbestos standards. The gasketing is economical and reliable.

GARLOCK

Circle 138

Pollution Engr 2/81

NON-ASBESTOS GASKETING

has been introduced by Garlock Mechanical Packing Div., Palmyra, N.Y., to meet the needs of industries faced with rigid government regulation of asbestos.

Blue-Gard Gasketing is composed of acrylic fiber combined with a nitrile rubber binder. Manufactured by the traditional sheeter method, it meets most of the ASTM F 104 specifications for compressed asbestos gasketing and has been tested satisfactorily on the job. Garlock reports.

Laboratory testing, the company says, demonstrated that the gasketing performed at a level rivaling white asbestos. Tests showed that Blue-Gard had sufficient chemical resistance to prevent impairment of its physical properties, does not contaminate the fluid being handled, does not promote corrosion of the flanges with which it makes contact and is capable of withstanding bolt pressure without crushing or undergoing excessive plastic flow.

It is sufficiently deformable, without resorting to excessive thickness to distribute the applied pressure evenly over surfaces to compensate for normal irregularities.

Sheet sizes are: 60 x 60 in. and 60 x 120 in. Thicknesses are: 1/32, 1/16, 1/32, 1/4 in.

Circle 281 on Inquiry Card

Commercial Car Journal Jan. '81

Asbestos-free gaskets rival the asbestos type

Although most of the gaskets used in this country still contain asbestos, and in substantial quantity, there are several pressing reasons for considering the asbestos-free variety: the belief by many that asbestos is carcinogenic or otherwise detrimental to health; the rising cost implementing and monitoring preventive health programs; and scarcity of the material. Two such types meriting attention were recently introduced.

One, available in sheet stock for stamped and die-cut gaskets, is called BLUE-GARD. Developed by the Mechanical Packing Division of Garlock (Palmyra, NY), the material has a lot going for it. Composed of acrylic fibers in a nitrile binder, it has a temperature limit of 700 F, sustains pressures up to 1000 psi, is non-contaminating to fluids and non-corrosive to contact flanges, and withstands required bolt pressures without cracking or excessive plastic flow. The material is sufficiently deformable to distribute applied pressures evenly over normal surface irregularities without resorting to excessive thickness, says Roy Whittaker, engineering director, yet elastic enough to maintain much of the applied loads when joint designs do not fully preclude movement.

The material has a density of 100 lb/cu ft, a compressibility range of 7% to 17%, 40% recovery, and will resist 180-deg, 12T bends without cracking. In terms of sealability, maximum leakage is only 0.8 mm/hr. Five-hour immersion in ASTM No. 3 oil at 300 F results in 0% to 13% swell and a maximum tensile loss of 50%. The same immersion period in ASTM Fuel B induces a 0% to 15% increase in thickness and a maximum weight gain of 20%. It is also resistant to alkaline solutions in the 1 ph to 11 ph range.

BLUE-GARD, which is available only from Garlock's distributors, comes in 60 in. x 60 in. and 60 in. x 120 in. sheet and thicknesses of 1/32 in., 1/16 in., 3/32 in. and 1/4 in. thick. Suggested resale price (the price from distributors) for 1/16 in. x 60 in. x 60 in. stock is roughly \$90/sheet.

The second product, a continuous-cord polytetrafluoroethylene material

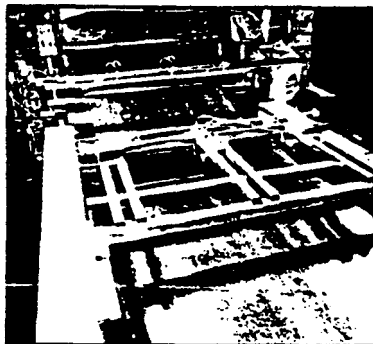
dubbed PALSEAL, is the latest addition to the PALMETTO line by Greene, Tweed & Co. (North Wales, PA). Although soft enough for glass joints, and sufficiently pliable to be installed in seconds, even on complex configurations, it can handle pressures in excess of 2000 psi and is especially resistant to environmental extremes, according to the company. For example, it is said to be suitable for use at temperatures as low as -450 F or as high as 500 F—600 F for short periods of time—and with all fluids except those containing free fluorine or alkali metals. Furthermore, the company adds, it is non-toxic, non-flammable and non-contaminating to fluids.

PALSEAL comes in seven sizes ranging from 1 mm to 1/4 in. diameter. A 50-ft length of the 1/4-in. material goes for \$69.

For more on BLUE-GARD, circle 201

Production Engr 1/81
Free nonasbestos
gasket sample

MARK 668



Blue-Gard compressed nonasbestos gasketing can seal as effectively as asbestos in most applications, according to its manufacturer. It is made of acrylic fiber combined with a nitrile rubber binder. Lab tests show that it has enough chemical resistance to prevent impairment of physical properties, does not promote flange corrosion, and can withstand needed bolt pressure without crushing or excessive plastic flow. Field tests confirm lab tests. The material comes in 1/32 to 1/4-in. thicknesses and 60 by 60 or 60 by 120-in. sheets. Special shapes can be fabricated—Garlock Mechanical Packing Div., Colt Industries, Palmyra, N.Y.

Making gaskets without asbestos

Acrylic fibers and a nitrile rubber binder are combined in a nonasbestos gasketing that meets most of the ASTM F-104 specifications for compressed asbestos gasketing, claims Colt Industries Inc.'s Garlock Mechanical Packing Div., Palmyra, N.Y. The new material has a lower tensile strength than compressed asbestos, but its sealing ability is as good as that of asbestos, says Garlock. Other physical characteristics are identical to those of asbestos sheet; and joint design remains about the same, say company experts. Small business will likely still want the asbestos, but larger firms will want the substitute, says Garlock. Circle 111.

INDUSTRY WEEK 1/26/81

Gasketing

has no asbestos

Compressed gasketing material seals as effectively as asbestos without its hazards or need to meet government regulations. Blue-Gard is made of acrylic fiber with a nitrile rubber binder. It meets most of the ASTM F 104 specifications for compressed asbestos gasketing, and is chemically resistant and noncontaminating. It can take required bolt pressure without crushing or undergoing excessive plastic flow. Garlock, Inc., 1666 Division St., Palmyra, NY 14522

3/81 Write in ENR 872

Asbestos: Enter new substitutes

Although the U.S. isn't contemplating swift action to further restrict asbestos use, makers and buyers of asbestos gaskets and seals are seriously considering some new replacements. The motivation: pressure from labor.

The recent emergence of several new asbestos substitutes—featuring synthetic fibers and metals—and their growing acceptance by makers and users of asbestos products may signal a change of emphasis in the U.S. campaign to replace the material.

Until recently, the thrust has been on substituting such materials as glass

fibers and mineral wool in thermal insulation applications. But the new products aim at uses in which asbestos is employed as a composite—e.g., in gaskets and seals, protective industrial clothing, automobile-brake pads, clutch facings, and so on.

Use of the new substitutes is slowly gaining ground, propelled not so much

by the threat of any imminent new curbs on asbestos (see box for an update on U.S. anti-asbestos moves), as by the growing popularity of civil suits started by workers who claim that exposure to the material has made them ill.

"We're just fed up with dealing with these hassles," says a spokesman for a sealing-material manufacturer, who complains about pressure from unions, class-action suits, and difficulties in getting dumping permits for asbestos wastes. "even though our products contain the asbestos in encapsulated form, which we feel presents no danger."

(Outside the U.S., further curbs on asbestos are expected to unfold slowly, too. Development of replacement materials focuses mainly on use of synthetic mineral fibers.)

VARIED RANGE—Several gasketing manufacturers are pinning their hopes on non-asbestos materials, and are claiming performance attributes comparable with those of the real thing. Garlock Inc. (Palmyra, N.Y.) has recently introduced its Blue-Gard gasketing material. The company will not reveal what the substitute fiber is, beyond saying that it is an acrylic.

The material is said to have a pressure-temperature rating* of 700,000 vs. 300,000 for compressed asbestos materials, and up to 200,000 for other fiber-based gaskets. The upper temperature limit is claimed to be 700°F, whereas compressed asbestos is rated to 750°F and other non-asbestos substances to 500°F or less. (Woven asbestos cloth alone—without the organic binder—is temperature-resistant to about 1,000°F.)

CHEMICAL ENGINEERING FEBRUARY 1980

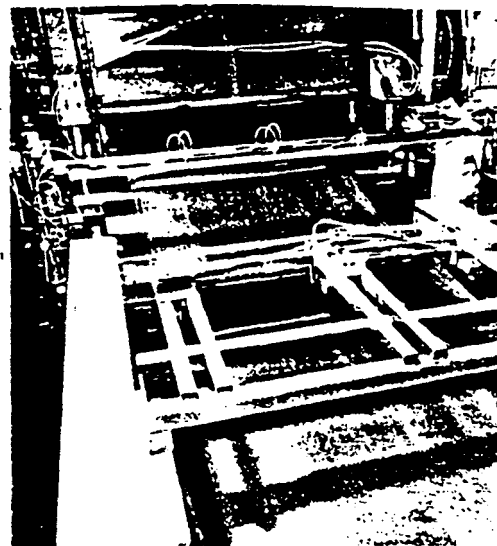
Another company, Parker-Hannifin (Lexington, Ky.), has recently announced several seal materials (carbon fibers, tetrafluoroethylene) that it hopes will supplant asbestos gaskets.

One is a double-jacketed, corrugated—
*An approximate measure of real strength, arrived at by multiplying the pressure (in psi) and the temperature (°F) at which the material fails.

metal gasket available in soft steel, copper, Monel or nickel.

Also taking aim at asbestos is Du Pont, which has fashioned its aromatic-polyamide fiber Kevlar into a new ultrafine-pulp form said to be more compatible with existing asbestos-processing equipment. "With Kevlar fiber, problems can arise from its inherent toughness and because the fiber does not break up during mixing. It entangles, forming clumps in such products as friction materials," says David E. Hoiness, a senior research chemist at Du Pont.

The firm could have improved dispersion simply by reducing fiber length, but this would have affected the binding and reinforcing properties of the end-product. The fibers in the new pulp are shorter, but the length/diameter ratio is not changed because each fiber-stem has numerous ultrafine fibers attached to it.



New non-asbestos gasketing sheet in production

According to company spokesmen, while the new material is at least seven times as expensive as asbestos fibers, it is cost-effective because 1 lb of it can replace as much as 20 lb of asbestos, with low-cost fillers making up the volume difference. True, brake linings cost 25% more than asbestos-based ones (although 50% less than the semi-metallic brake linings also being tried as an asbestos alternative). But in accelerated brake-wear tests run by 3M Co. (St. Paul, Minn.), Kevlar-containing brake linings have been found to have 50% less wear than asbestos linings.

A variety of synthetic fibers—including ceramics, acrylics—have been available for several years as replacements for asbestos in fire-protection clothing. The most recent addition is polybenzimidazole (PBI), for which Celanese Corp. (New York City) announced plans for commercial production in September 1980. Full-scale output will begin in 1983. Although expensive (\$30/lb), PBI is said to have excellent wear and shrink characteristics, and will also be targeted for non-asbestos applications such as baghouse filters.

Even Johns-Manville Co. (Denver, Colo.), perhaps the U.S. firm most closely associated with asbestos, makes available packings and gaskets in about 10 alternative materials, including graphite, Kevlar, carbon fibers and TFE. But a spokesman notes that these are more expensive and aim at appli-

(continued next page)

ications involving either temperatures higher than those withstood by asbestos, or higher acidity.

"We have not replaced asbestos-based packing and gasket products, and we are not going to discontinue any," says the spokesman. "We sell much more asbestos-based materials than we do all other materials combined. Asbestos has such a broad range of applications."

ALLAYING LEGAL ACTION—Until restrictions are applied on composite materials containing asbestos, the new products' best ally is the growing fear of suits filed by workers who claim that exposure to asbestos has caused asbestosis or other diseases. According to one seal maker: "We feel we can prove that asbestos is not harmful, especially when it is bound in a matrix, as it is in sealing products."

However, our workers and many customer employees have sued, claiming asbestos-related injury. And it is a problem to invalidate those claims."

For this reason, and because of sentiments such as "we feel pretty sure that there will be restrictions against asbestos use within the next ten years," manufacturers believe it is only prudent to look into alternatives.

Nicholas Basta

"Asbestos: Enter New Substitutes" cont.

Nonasbestos gasketing uses acrylic fibers

Nonasbestos gasketing, which seals as effectively as asbestos in most applications, consists of acrylic fiber combined with a nitrile-rubber binder. Manufactured by the traditional sheeting method, Blue-Gard compressed gasketing meets most ASTM F 104 specifications for compressed asbestos gasketing, according to Garlock's Mechanical Packing Div.

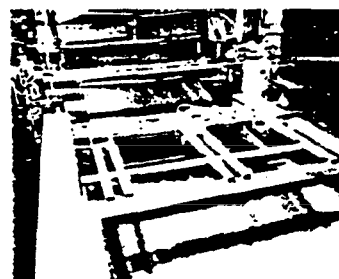
In laboratory tests, the material resists chemicals, preventing loss of physical properties, and does not contaminate fluids. In addition, it does not promote corrosion of flanges and withstands bolt pressure without crushing or excessive plastic flow.

The gasketing distributes pressure evenly over surfaces to compensate for normal irregularities, says Roy Whitaker, Director of Engineering. It is also elastic enough to maintain an adequate portion of the applied load when joint movements are not fully eliminated by joint design. Material thickness ranges from 1/32 to 1/8 in. (0.79 to 3.2 mm); sheet size, 60 x 60 and 60 x 120 in. (1.5 x 1.5, 1.5 x 3.7 m). Die-cut gaskets are also fabricated at the company's industrial-gasket shop. Circle 410



Nonasbestos gasketing from Garlock is virtually impervious to acid.

NON-ASBESTOS GASKETING rivals asbestos in performance



Composed of acrylic fiber combined with a nitrile rubber binder, Blue-Gard compressed non-asbestos gasketing demonstrates a performance that rivals that of white asbestos. In tests, it shows sufficient

chemical resistance to prevent impairment of its physical properties, does not contaminate fluid handled by system, does not promote corrosion of flanges, and withstands required bolt pressure without crushing. Blue-Gard comes 1/32, 1/16, 3/32, and 1/8 in. thick in 60 x 60 and 60 x 120-in. sheet sizes. Garlock Inc., Mechanical Packing Div., 1666 Division St., Palmyra, NY 14522

▲ MARK NED-627

new Equipment Digest 2/81

STEEL ENGINEERING 117-RECORD
MARCH 1980

Gasketing

Compressed non-asbestos gasketing is made of acrylic fibers held in a nitrile rubber binder. It is designed to replace asbestos gasketing products in most applications. According to the maker, the material has excellent chemical resistance, does not promote corrosion of metal flanges, is capable of withstanding pressure without crushing or undergoing plastic deformation and is suitably deformable to distribute pressure evenly on irregular surfaces, yet elastic enough to resist extrusion and excessive creep. GALT INDUSTRIES INC. GARLOCK MECHANICAL PACKING DIVISION 430 PARK AVE. NEW YORK, N.Y. 10022.

401

Materials Eng 3/81

CLIPPED BY
EACONS

NO-ASBESTOS GASKET

If asbestos is risky — use something else. That's the philosophy of packaging experts Colt Industries Inc., which has developed a special compressed gasket made of acrylic fibers held in a nitrile rubber binder. It is designed to replace asbestos gasket products used around a piston or joint to control industrial container leakage.

Certain characteristics of asbestos gaskets make them nearly irreplaceable. They do not burn, conduct electricity or corrode from chemicals. However, the Blue-Gard gasket will do all that, plus withstand pressure without crushing.

Colt Industries Inc.'s Garlock Mechanical Packing Division makes the gasket, which meets most ASTM F104 specifications for compressed asbestos gaskets. Contact: Colt Industries Inc., 430 Park Ave., New York, N.Y. 10022.

Asbestos substitutes are aiming for use in products in which asbestos is used as a composite, including gaskets and seals, protective industrial clothing, auto brake pads, clutch facings, and others. The substitutes previously were used in glass fibers and mineral wool in thermal insulation applications. Use of the new substitutes is propelled not so much by the threat of new curbs on asbestos as by the growing popularity of civil suits started by workers claiming that exposure to asbestos has affected their health. Garlock Inc.'s (Palmyra, NY) Blue-Gard gasketing material has a pressure rating of 700,000, vs 300,000 for compressed asbestos materials. The upper temperature limit is 700°F, vs 750°F for compressed asbestos and 500°F for other nonasbestos substances. Parker-Hannifin's new seal materials (carbon fibers, tetrafluoroethylene) should supplant asbestos gaskets. DuPont's Kevlar has been fashioned into a new ultrafine-pulp form, more compatible with existing asbestos-processing equipment. The new material is 7X as expensive as asbestos fibers but is cost-effective because 1 lb of it can replace 20 lbs of asbestos. Other products are discussed.

•Chem Eng 2/9/81 p47-51

March/April

COMPRESSED NON-ASBESTOS GASKETING

is featured in a bulletin. The bulletin details the specifications of this new gasketing material composed of acrylic fiber combined with a nitrile rubber binder. Manufactured by the traditional sheet method, the material meets most of the ASTM F-104 standards for compressed asbestos sheet. The gasketing is serviceable through a pH range of 1 through 11 and temperatures up to 700 deg. F.—Garlock Inc., Mechanical Packing Div. 267-14522G1

Write in No. 1372 on card

Water &
Waste Digest

41A-71 TECHNICAL SURVEY
WEEKLY

FEB 14 1981

CLIPPED BY
EACONS

STONE, GLASS & CLAY

Acrylic fibers and a nitrile rubber binder combined as a nonasbestos gasketing meet most of the ASTM F-104 specifications for compressed asbestos gasketing, claims Colt Industries Inc's Garlock Mechanical Packing division (Palmyra, NY). Although the new material has a lower tensile strength than compressed asbestos, its sealing ability matches asbestos, Garlock says. Other physical characteristics are identical to those of asbestos sheet; joint design remains about the same. Garlock predicts that small businesses will still want asbestos but larger firms will want the substitute.

INDWeek 1/26/81 p33

Non-asbestos gasketing

Blue-Gard compressed, non-asbestos gasketing is manufactured from an acrylic fiber combined with a nitrile rubber binder. Gasketing is available in sheets in thicknesses of 1/32, 1/16, 3/32, and 1/8 inches. Sheet sizes are 60 by 60 inches and 60 by 120 inches. Additional information from Garlock, Colt Industries, is available.

Write No. 232 on reader service card

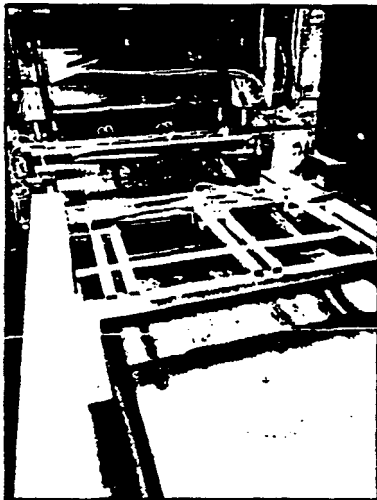
Occupational Hazards 4/81

Another Non-Asbestos Gasket Material Sets Sail

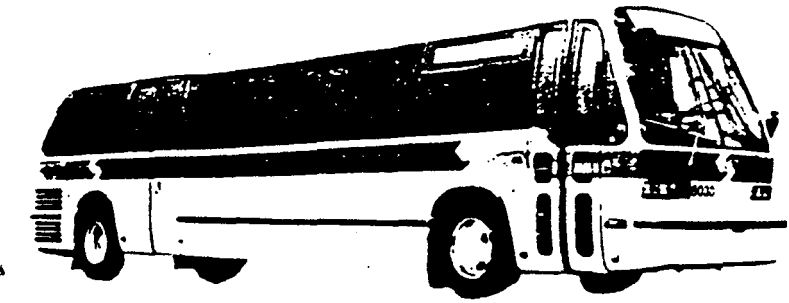
With the recent flap over asbestos moving into a stage where it is an accepted parameter and companies are producing products to meet the guidelines, another manufacturer has joined the non-asbestos product roster.

Garlock's Mechanical Packing Division has taken the wraps off its Blue-Gard compressed non-asbestos gasketing. The Garlock Blue-Gard is made of acrylic fiber, combined with a nitrile rubber binder. Manufactured by the traditional sheet method, Garlock claims its Blue-Gard meets most ASTM F 104 specs for compressed asbestos gasketing. In the laboratory testing, Garlock determined that Blue-Gard material has sufficient chemical resistance to prevent impairment of its physical properties, does not contaminate the fluid being handled by the system, does not promote corrosion of the flanges with which it comes in contact, and is capable of withstanding required bolt pressure without crushing or undergoing excessive plastic flow.

In addition, Garlock Director of Engineering Roy Whittaker says Blue-Gard gasketing is sufficiently deformable, without resorting to excessive thickness, to distribute the applied pressure evenly over surfaces to compensate for normal irregularities. Whittaker adds



The replacement of asbestos materials with alternative materials is in full swing. Garlock is the latest to join the fight.



While the asbestos/non-asbestos story keeps rolling on, vehicle manufacturers are fighting a continuing battle with noise regulations leading to new materials developments.

that the gasketing is elastic enough to maintain an adequate portion of the applied load when joint movements are not fully eliminated by the joint design, and resists excessive creep or extrusion.

Garlock embarked on the research program to produce a compressed non-asbestos gasketing material in response to requests of customers who were concerned that a combination of circumstances was making the cost of asbestos gasketing prohibitive. Besides the increasing cost of the material itself, asbestos is the target of federal regulations, mandating air sampling, special disposal procedures and documentation.

The gasketing is available in thicknesses of: 1/32", 1/16", 3/32", 1/8" and sheet sizes of 60" x 60" and 60" x 120" (152cm x 152cm and 152cm x 305cm). *

ENTER 1418 ON READER SERVICE CARD

68A-3P DIESEL
PROGRESS NORTH
AMERICAN
10 ti. yr. 25,000

FEB 1981

CLIPPED BY
BACONS

DEAR PAPER TRADE JOURNAL
SEMI-MONTHLY 1981

CLIPPED BY
BACONS

Non-asbestos gasketing

Garlock Inc.'s Blue-Gard compressed non-asbestos gasketing is described in a two-page bulletin (GSK-310). The bulletin gives specifications of the company's gasketing material, which is composed of acrylic fiber combined with a nitrile rubber binder, and details chemical resistance, physical properties, and typical test data.

Garlock Inc., Mechanical Packing Div., 1666 Division St., Palmyra, N.Y. 14522.

DEAR PAPER TRADE JOURNAL
SEMI-MONTHLY 1981

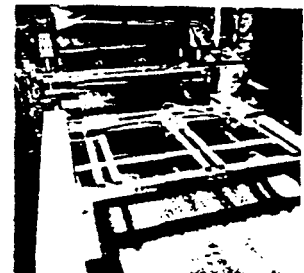
CLIPPED BY
BACONS

Non-asbestos gasketing

Garlock's Mechanical Packing Div. offers Blue-Gard, a compressed non-asbestos gasketing composed of acrylic fiber combined with a nitrile rubber binder. The composition has sufficient resistance to prevent impairment, it does not contaminate the fluid being processed, does not promote corrosion, and withstands bolt pressure without crushing, according to Garlock.

Garlock, Mechanical Packing Div., 1666 Division St., Palmyra, N.Y. 14522.

Non-asbestos gasketing with sealing features equal to asbestos. The acrylic fiber with nitrile rubber binder compressed-gasket material has survived rigid field tests and complies with OSHA, EPA and ASTM specifications. BLUE-GARD gasketing is available in standard off-the-shelf flange sizes and forms, also



in sheets 1/32, 1/16, 3/32 and 1/8-in. thick, 5-ft square or 5 x 10 ft. Price is currently around 15% above premium grade asbestos sheet. Engineering spec sheet is available. Garlock, Mechanical Packing Div.

Circle No. 317
Industrial Distribution 4/81

Replacing asbestos

Substitutes are eating into markets

NEW YORK — The recent emergence of several new asbestos substitutes — featuring synthetic fibres and metals — and their growing acceptance by makers and users of asbestos products, may signal a change of emphasis in the United States campaign to replace the material.

Glass fibres

Until recently, the thrust has been on substituting such materials as glass fibres and mineral wool in thermal insulation applications. But the new products aim at uses in which asbestos is employed as a composite — things like gaskets and seals, protective industrial clothing, automobile-brake pads, clutch facings, and so on.

For Canadian asbestos producers it marks another bit of bad news in a long string that has haunted the industry since the early 1970s.

All Canadian asbestos producers are major exporters to the U.S., including the larger companies: Johns-Manville Canada Inc.; Flintkote Mines Ltd. (Gensar Ltd. owns Flintkote's U.S. parent); Societe Asbestos Ltée. (owned by the Quebec government); Cassiar Resources Ltd. (wholly-owned by Brinco Ltd.); Asbestos Corp. (TSE \$29); and United Asbestos Inc. (TSE \$7).

More trouble

The Canadian industry's troubles were compounded last week by an Ontario Federation of Labor call for a total ban on the use of asbestos within four years. The OFL estimated that 200,000 workers already exposed to asbestos in their jobs will die over the next 20 years from cancer and other diseases.

"There has never been a substance used in society that has caused so many needless deaths," the OFL said in a brief presented to the royal commission on asbestos, meeting in Toronto.

Meanwhile, in the U.S. use of the new substitutes is slowly gaining ground, propelled not so much by the threat of any imminent new curbs on asbestos, as by the growing popularity of civil suits started by workers who claim that exposure to the material has made them ill.

"We're just fed up with dealing with these hassles," says a spokesman for a sealing-material manufacturer, who complains about pressure from unions, class-action suits, and difficulties in getting dumping permits for asbestos wastes.

Several gasketing manufacturers are pinning their hopes on non-asbestos materials, and are claiming performance attributes comparable with those of the real thing. Garlock Inc. of Palmyra, N.Y. has recently introduced its Blue-Gard gasketing material.

Another company, Parker-Hannifin Corp. of Lexington, Ky., has recently announced several seal materials that it hopes will supplant asbestos gaskets. One is a double-jacketed, corrugated-metal gasket available in soft steel, copper, Monel or nickel.

Also taking aim at asbestos is E.I. du Pont de Nemours and Co., Wilmington, Del., with its fibre

Kevlar. According to company spokesmen, while the new material is at least seven times as expensive as asbestos fibres, it is cost-effective because one pound of it can replace as much as 20 pounds of asbestos, with low-cost fillers making up the volume difference.

True, brake linings cost 25% more than asbestos-based ones (although 50% less than the semi-metallic brake linings also being tried as an asbestos alternative). But in accelerated brake-wear tests run by 3M Co. of St. Paul, Minn., Kevlar-containing brake linings have been found to have 50% less wear than asbestos linings.

More expensive

Even Johns-Manville Co. of Denver, perhaps the U.S. firm most closely associated with asbestos, makes available packing, and gaskets in about 10 alternative materials, including graphite, Kevlar, carbon fibres and TFE. But a spokesman notes that these are more expensive and aim at applications involving either temperatures higher than those withstood by asbestos, or higher acidity.

73-2 FINANCIAL TIMES CANADA
WEEKLY 63.000(CAN)

CLIPPED BY
BACONS

Non-Asbestos Gasketing

Blue-Gard compressed non-asbestos gasketing is composed of acrylic fiber combined with a nitrile rubber binder. Product is sufficiently deformable to distribute the applied pressure evenly over surfaces to compensate for normal irregularities. It is available in thicknesses of 1/32, 1/16, 1/8, and 1/4 in. in sheet sizes 60 X 60 and 60 X 120 in. Garlock.

Circle 270 on Reader Service Card

Power Engineering 4/81

31A-6 FOOD ENGINEERING
MONTHLY 55.000

CLIPPED BY
BACONS

Circle 482

NON-ASBESTOS GASKETING. Bulletin details the specifications on this gasketing material composed of acrylic fiber combined with a nitrile rubber binder. Gasket is serviceable through a pH range of one through 11 and temperatures up to 371°C (700°F). It is available in sheets in thicknesses of 1/32, 1/16, 1/8, and 1/4 inches. —Garlock, Inc., Mechanical Packing Div., Palmyra, NY.

Circle 471

Non-asbestos gasketing seals effectively

From the time the government determined that asbestos is carcinogenic, and required that it be closely controlled in the workplace, gasketing manufacturers have been searching for alternate materials which provide comparable tensile strength and resistance to heat loss.

In January, the Garlock Mechanical Packing Div., Colt Industries, became one of the early companies to introduce a non-asbestos gasketing, under the trade name "Blue-Gard."

The Blue-Gard material is made of an acrylic fiber combined with a nitrile rubber binder, and closely resembles blue linoleum. It meets most of the ASTM F 104 specifications, which

freon, for example) but a second generation is now under development for such applications.

Blue-Gard gasketing sells for about 15% more than the company's premium grade asbestos material. For more information, circle 1 on card.

Non-asbestos gasketing is just as effective

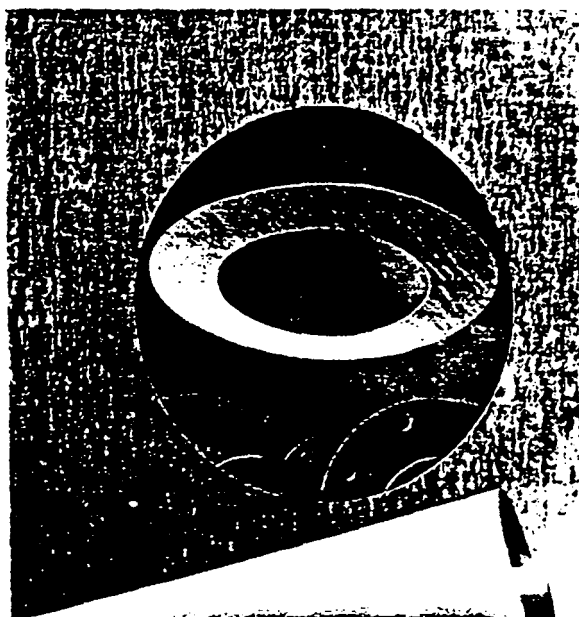
Non-asbestos gasketing is a tough sheet material formulated to seal as effectively as compressed asbestos in most applications, according to the manufacturer. Its fiber content is acrylic, bound by nitrile. The gasketing can reportedly be safely installed in most static sealing applications as a universal replacement gasket. It is said to meet a wide variety of service conditions in the hostile environments of power generation, metalworking, hydrocarbon processing, mining, and other industries where effective sealing is vital. The gasketing is formulated for severe service involving higher pressures and temperatures. It can be used for general service against mild acids, alkalies, gases, oils, solvents and refrigerants. The gasketing reportedly withstands pH range 1-11, and temperature resistance to +700F. Garlock, Mechanical Packing Division, 1666 Division St., Palmyra, NY 14522.

Write 4192 on reader service card

ASTM test method	Physical property	Typical data
F 37	Sealability Maximum milliliter per hour leakage:	.8
F 36	Recovery Minimum percent:	40
F 36	Compressibility Percent range:	7-17
F 146	Oil resistance after 5-hour immersions ASTM #3 oil @ +300° F: Thickness increase range: Maximum tensile loss: ASTM fuel B @ +70-85° F: Thickness increase range: Maximum weight increase:	0-13% 50% 0-15% 20%
	Flexibility Bend 180° around rod with diameter 12x thicker than sheet:	No cracking
	Density Grams/cm ³ : (pounds/ft ³):	1.60 (100)
Other test data		
High temperature limit: +371° C (+700° F)		
Maximum pressure (psi) x temperature (° F): 700,000		
Fluid resistance: pH of 1 through 11		
Source: Garlock Mechanical Packing Div.		

establish procedures for testing a gasket's compressibility, recovery, and sealability.

The gasketing has been tested in the range to 700° F. and its tensile strength is rated to 2000 psi. The material has limited chemical resistance (it is attacked by some types of



Energy Systems Product News
April 1981

20 Purchasing 10/1/81
3/21

Asbestos-free gasketing emerges from a maze of federal regulations

Federal restrictions governing the production and use of asbestos-containing materials have grown to the point that a federal register has been created to keep track of all the citations. These regulations, and the concerns to which they are directed, are causing industry to adjust its thinking regarding asbestos and its applications. As an alternative the Garlock company of Palmyra, NY 14522, introduced a line of compressed non-asbestos gasketing that eliminates the bureaucratic red tape and additional costs associated with using asbestos materials.

AN APRIL 1979 REPORT by the Environmental Protection Agency reveals that six separate federal agencies are now involved in the enforcement of the various regulations pertaining to production and use of materials containing asbestos.

The agencies involved in the regulations are: The Consumer Product Safety Commission, The Department of Transportation, The Environmental Protection Agency, The Federal Drug Administration, The Mining Enforcement and Safety Administration, and the Occupational Safety and Health Administration (OSHA).

The forty-page government report does not contain the texts of the regulations, but is designed to be "a condensed source of information relating to the development of the various standards presently enforced by the agencies as well as proposals for new or modified regulations."

According to the report, twenty separate citations have been issued under provisions of the EPA, including the Clean Air Act, the Federal Water Pollution Control Act, and the Toxic Substances Control Act.

Industry burdened with restrictions

Among the federal requirements imposed upon companies working with asbestos are mandatory employee medical examinations, and engineering controls such as isolation, enclosure, exhaust ventilation and dust collection. Workplaces where asbestos is manufactured, processed, packaged, stored, applied, used or handled must be monitored to determine asbestos levels. The employer must also make protective clothing and respiratory devices available.

The introduction of Garlock-BLUE-GARD compressed non-asbestos gasketing eliminates industry's need to meet expensive and rigid governmental standards applied to the use of asbestos. The product is the culmination of a two-year research program and is designed to seal as effectively as asbestos in most applications.

Garlock embarked on the research program that produced the non-asbestos gasketing in response to customer requests. Many were concerned that a combination of circumstances was making the use of asbestos gasketing prohibitive. Besides the increasing cost of the material itself, they cited the tangle of regulations mandating air sampling, special disposal procedures and documentation. Spokespersons in the industry were also voicing a concern that employee morale and productivity could be jeopardized by the health concerns surrounding asbestos.

Testing proves effectiveness

Manufactured by the traditional sheet rubber method, the new gasketing is composed of acrylic fiber, combined with a nitrile rubber binder. It meets most of the ASTM-F-104 specifications for compressed asbestos gasketing, and has been tested satisfactorily in on-the-job applications by more than 50 of the company's customers.

Earlier this year rigorous laboratory testing programs demonstrated that BLUE-GARD gasketing performs at a level rivaling white asbestos. During testing, it was determined that the non-asbestos material has sufficient chemical resistance to prevent impairment of its physical properties. It was further proven that it does not contaminate the fluid being handled by the system; does not promote corrosion of the flanges with which it comes into contact; and is capable of withstanding required bolt pressure without undergoing excessive plastic flow.

Roy Whittaker, Garlock's Director of Engineering, indicates that the new gasketing material is sufficiently deformable, without resorting to excessive thickness, to distribute the applied pressure evenly over surfaces to compensate for normal irregularities. It also has enough elasticity to maintain an adequate portion of the applied load when joint movements are not fully eliminated by the joint design. It resists excessive creep or extrusion and lends itself to easy installation and separation for ultimate removal.

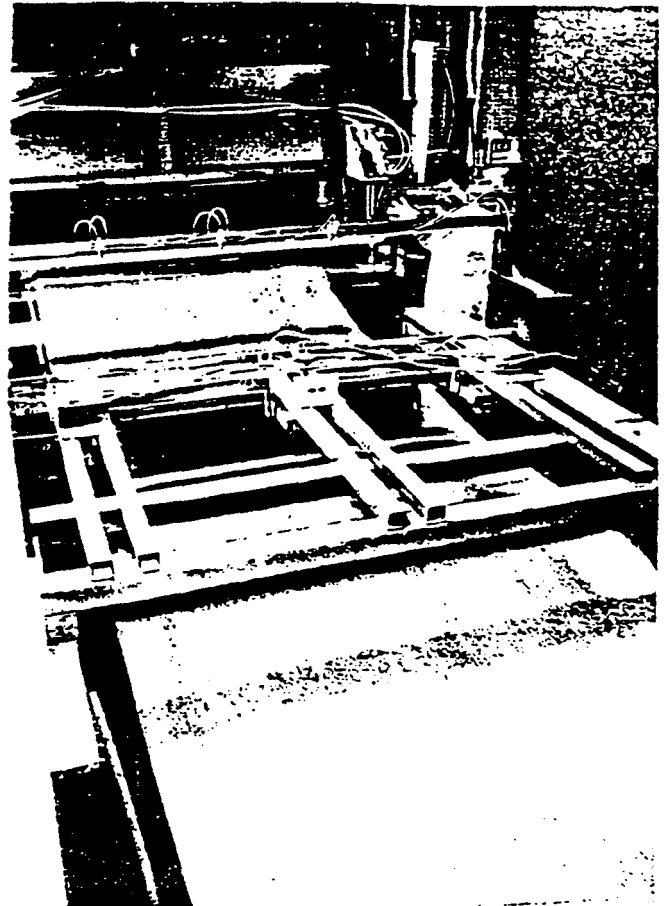
When the cost of compliance with regulations is figured into the current price of asbestos gasketing, BLUE-GARD is seen as an economical alternative. It is available in thicknesses of: $\frac{1}{32}$ in., $\frac{1}{16}$ in., $\frac{3}{32}$ in., $\frac{1}{8}$ in., and sheet sizes of 60 in. by 60 in. or 60 in. by 120 in.

Fabrication of precise die-cut gaskets are handled at the company's Industrial Gasket shop in Palmyra, NY. A special research and engineering staff is available to handle the special requirements of product designers and component specifiers adapting the gasketing to their own processes.

(Continued next page)

ENGINEER'S DIGEST/MAY 1981

feature report



In production and rolling off the Troester Sheeter is a sheet of the compressed non-asbestos gas-keting, under the watchful eye of the operator. The sheeter method has been in use since 1896.

ASTM TEST METHOD	PHYSICAL PROPERTY	TYPICAL DATA
F 37	Sealability Maximum Milliliter Hour Leakage	5
F 36	Recovery Minimum Percent	40
F 36	Compressibility Percent Range	7-17
F 146	Oil Resistance after 5 Hour Immersions ASTM #3 Oil @ +300°F Thickness Increase Range Maximum Tensile Loss ASTM Fuel B @ +700°F Thickness Increase Range Maximum Weight Increase	 0-15% 50% 0-15% 25%
	Flexibility Bend 180° around rod with diameter 1/2X thicker than sheet	No cracking
	Density Grams/Cm. ³ Pounds/Ft. ³	1.60 100
OTHER DATA		
High Temperature Limit: +375°C (+700°F)**		
Maximum Pressure (PSI): Temperature: 700°F + 700,000**		
Fluid Resistance: From oil to kerosene		
** This is a general guide and should not be the sole means of selecting or rejecting this material.		