

H&H SEAL AND PRODUCTS

Gaskets and Packings



223 HOUSE ST.
ALVIN, TX 77511

(832) 802-3083
HHSEALPRODUCTS.COM

Gaskets and Packings

Table of Contents

	Page
MECHANICAL GASKETS AND PACKING	----- 3
METALLIC GASKETS AND PACKING	----- 17
NON-METALLIC GASKETS AND PACKING	----- 26
GASKETS AND PACKING RING JOINTS	----- 51



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

H&H SEAL AND PRODUCTS

Gaskets and Packings

MECHANICAL PACKING



223 HOUSE ST.
ALVIN, TX 77511

(832) 802-3083
HHSEALPRODUCTS.COM

Gaskets and Packings

MECHANICAL PACKING

Carbon Fiber and Graphite

Flexible Graphite w/Inconel Wire Low Emission

Valve packing is self-lubricating, non-hardening, dimensionally stable and resistant to gases and fluids as well as heat, pressure and chemicals. It's high temperature flexible graphite and Inconel® filament jacket affords mechanical stability while the advanced construction provides leakage control and high integrity in steam service. Due to its physical properties and ability to minimize friction is ideal for valves and can be used within a broad range of applications.

Certified Low-Leakage Packing Technology
TA-Luft approved
Suitable to VOC and VHAP emissions regulation
Environmentally friendly valve stem packing with extreme emissions control

API 622
API 607
ISO 15848

Service Limits

- Temperature °F (°C)
- Minimum -400 (-240)
- Maximum 851 (455)
- Steam 1202 (650)
- Pressure psi (bar) Static 6526 (450)
- pH Minimum 0 Maximum 14

Flexible Graphite

Manufactured from high purity flexible graphite that is expanded and formed into a braidable yarn and then braided without binders or wire reinforcement. The finished product retains all the inherent benefits of flexible graphite: heat resistance, chemical inertness, low friction, self lubrication, and ready conformability.

The outstanding properties of this style make it a truly multi-service packing capable of a wide variety of uses throughout a plant. This style may be used in valves, pumps, expansion joints, mixers and agitators in the hostile environments of hydrocarbon processing, pulp and paper, power generation, metal-working and other industries where effective sealing is vital.

Service Limits

- Temperature °F (°C)
- Minimum -400 (-240)
- Maximum 842 (450)
- Steam 1202 (650)
- Pressure psi (bar) Static 4351 (300)
- Rotating 435 (30)
- Reciprocating 1450 (100)
- pH Minimum 0 Maximum 14
- Shaft Speed f/m (m/s) Maximum 3937(20)

Valve Stem Packing

Composed of layers of flexible graphite tape pli-strands; each filament is reinforced with an Inconel* wire jacket. The strands are then sq dense yet malleable packing. Outwardly it is then impregnated with lubricating agents wh friction.

Self-lubricating, non-hardening, dimensionally stable and resistant to heat, pressure and chemicals. The Inconel* filament jacket affords mechanical stability. Advanced construction provides leakage control and high integrity in steam service.

Due to it's physical properties and ability to minimize friction is ideal for valves and broad range



223 HOUSE ST. ALVIN, TX
77571

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

of applications. It is well suited for power plants, refineries, petrochemical in processing as well as sealing applications in steam at high pressure and temperature.

Service Limits

Temperature °F (°C)
Minimum -400 (-240)
Maximum 842 (450)

Steam 1202 (650)
Pressure psi (bar)
Static 6500 (450)
pH Minimum 0 Maximum 14

Flexible Graphite, Wire Reinforced

Manufactured from high purity flexible graphite that is expanded and formed into a weave-able yarn and then braided in a unique construction with wire reinforcement. The finished product retains all the inherent benefits of flexible graphite; while the wire reinforcement provides greater mechanical strength. Particularly suited for use in high temperature, high pressure steam service. In addition, it can also handle most chemicals, acids and alkalis. This style is excellent for use in steam turbines, high temperature motor-actuated valves and for high pressure/high temperature valve applications in general.

Service Limit

Temperature °F (°C)
Minimum -464 (-240)
Maximum 840 (450)

Steam 1202 (650)
Pressure psi (bar) Static 5800 (400)
pH Minimum 0 Maximum 14

Graphite Yarn, Graphite Filled

Low friction, high strength, graphite fiber, twisted together and interlock braided. This style contains a special lubricant to provide a bearing film, and protect shafts from scoring. It also acts as a blocking agent to prevent wicking.

Ideally suited for use in severe service valves and rotary shaft applications. It handles strong acids and alkali solutions except fuming nitric acid, oleum and fluorine. It can be used to seal steam, water, oil, solvents, alkalis, and acids. It is often used as end rings for packing sets utilizing softer packings that might tend to extrude. This style also handles high temperatures, extremely high shaft speeds (Call for Service Limits), most strong chemicals, and reduces shaft wear.

Service Limits

Temperature °F (°C)
Minimum -400 (-240)
Maximum 842 (450)
Steam 1202 (650)

Pressure psi (bar) Static 4351 (300)
Rotating 435 (30)
Reciprocating 1450 (100)
pH Minimum 0 Maximum 14
Shaft Speed f/m (m/s) Maximum 3937 (20)

Carbon Yarn, Graphite Filled

Manufactured from pure carbon yarn, which is interlock braided and impregnated with proprietary lubricants and graphite particles which fill voids, block leakage, and act as a break-in lubricant. The end product has a low coefficient of friction and tends to wear more evenly than most braided packings.

Handles water, steam, boiler feed, and aqueous solu-



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

tions of acids and alkalis. In service, it seats quickly and does not require extensive break-in adjustments. Commonly used for high speed pumps, blowers, dryers, high temperature valves, and furnace gasketing.

Service Limits

Temperature °F (°C)
Minimum -400 (-240)
Maximum 842 (450)
Steam 1202 (650)

Pressure psi (bar) Static 4351 (300)
Rotating 362 (25)
Reciprocating 1450 (100)
pH Minimum 0 Maximum 14
Shaft Speed f/m (m/s) Maximum 3937 (20)

Carbon Yarn, PTFE Impregnated

Interlocked braid of carbon fibers which are carefully impregnated with PTFE and a special lubricant. The resulting packing is very tough, resists wear, has excellent chemical resistance and prevents contamination.

Can handle chemicals over the entire 0-14 pH range except for strong oxidizers. It is very popular in the pulp and paper industry because it is especially designed for applications involving strong caustics, acids, bleaches, slurries, and services where contamination cannot be tolerated. This style is commonly used in valves and pumps, agitators, reactors, and autoclaves.

Service Limits

Temperature °F (°C)
Minimum -328 (-200)
Maximum 536 (280)
Steam - NA

Pressure psi (bar) Static 4351 (300)
Rotating 362 (25)
Reciprocating 1450 (100)
pH Minimum 0 Maximum 14
Shaft Speed f/m (m/s) Maximum 2952 (15)

High Temperature and High Pressure Valve Stem

Braid-over-core construction, using a special high temperature, Inconel reinforced fiber and a non-hardening core. The packing is impregnated with a high temperature resistant compound, and coated with fine particles of graphite to act as a surface lubricant. Treated with a sacrificial material to alleviate electrolytic action.

Firm, high density, non-asbestos packing. It can handle steam, most chemicals, mild acids, and alkalies. It is excellent for use in steam turbines, high temperature motor-actuated slide valves, and in high pressure/high temperature valving in general.

Service Limits

Temperature °F (°C)
Minimum - NA
Maximum 1202 (650)

Pressure psi (bar) Static 2500 (170)
pH Minimum 2 Maximum 12
Shaft Speed f/m (m/s) Maximum 2500 (13)

Flexible Graphite with Carbon Corners

Diagonally braided from pure, expanded flexible graphite, reinforced at the corners and throughout with high-quality carbon fibers. The carbon fiber reinforcement in the corners and body of the packing make it three times more resistant to extrusion and also increase the pressure handling capabilities compared to non-reinforced flexible graphite packing.

Extremely versatile packing can be used in many demanding applications, both dynamic and static.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

Particularly suited for high temperature and high pressure service in valves, pumps, expansion joints, mixers and agitators. It can handle most chemicals in the 0-14 pH range with the exception of strong oxidizers.

Service Limits

Temperature °F (°C)
Minimum -400 (-240)
Maximum 842 (450)
Steam 1202 (650)

Pressure psi (bar) Static 4351 (300)
Rotating 435 (30)
Reciprocating 2900 (200)
pH Minimum 0 Maximum 14
Shaft Speed f/m (m/s) Maximum 3937 (20)

Injectable JAMPAK®

JAMPAK®- Injectable pump and valve sealant combines a malleable packing material with space-age chemistry and technology to produce a superior pump and valve packing material that can be injected while the pump or valve is operating, without interrupting production.

Sealants are easily installed with any flat-bladed tool, such as a putty knife or wide-bladed screwdriver. Or, the material can be finger-packed into the box. An anti-extrusion ring of the appropriate material is placed in the stuffing box around the shaft. A second ring is put in place after the sealant is installed.

Available in two standard grades to suit a variety of applications, the sealants can be used to replace conventional compression packing in centrifugal pumps, valves and other rotating equipment where compression packings are being used.

Characteristics

Malleable, putty-like consistency makes it easy to use and install.
Utilizes latest chemistry and fiber technology.
Works well on worn shafts by conforming to odd shapes.
Low coefficient of friction reduces heat.
Operates virtually leak free.
Convenient packaging.

Benefits

Reduces operating costs by being less costly over the life of the pump or valve.
Saves on energy consumption.
Reduces or eliminates downtime.
Extends equipment life.
Self Lubricating.
Reduces shaft and sleeve wear.
No flush required.

Aramid Yarn

Aramid Yarn corners w/pure PTFE yarn

Interlock braided packing, using pure PTFE yarn, reinforced with aramid corners. The yarns are pretreated with PTFE dispersion, plus a break-in lubricant to reduce the coefficient of friction, as well as the frictional heat created by high shaft speeds.

Unique combination of PTFE and aramid fibers, is dimensionally stable, non-contaminating, has excellent lubricating and running characteristics, and because of the aramid corners, is very wear resistant. It handles acids, alkalis, and a broad range of chemicals. It is well suited for service in rotary and reciprocating pumps, mixers, agitators and reactors, especially where abrasive wear is a problem.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

Service Limits

Temperature °F (°C)
Minimum -148 (-100)
Maximum 536 (280)

Pressure psi (bar) Static 2600 (180)
Rotating 435 (30)
Reciprocating 1450 (100)
pH Minimum 2 Maximum 12

Aramid Yarn with PTFE

Interlock braided packing using aramid yarn treated with PTFE suspensoid. The packing is also lubricated with a silicon-based compound for quick and easy break-in.

Extremely durable packing able to withstand granular and abrasive applications. It is recommended for service in superheated steam, slurries, petroleum derivatives, solvents and liquified gases. It is commonly used in centrifugal, rotary and reciprocating pumps, agitators and mixers, especially in the paper, steel, petroleum and chemical industries, and in sewage treatment plants.

Service Limits
Temperature °F (°C)
Minimum -148 (-100)
Maximum 536 (280)
Pressure psi (bar) Static 3625 (250)

Rotating 507 (35)
Reciprocating 2900 (200)
pH Minimum 2 Maximum 12
Shaft Speed f/m (m/s) Maximum 2952 (15)

Expanded PTFE with Graphite and Aramid Corners

An interlock braid of PTFE/graphite yarn, reinforced with high strength aramid yarn corners. Formed from expanded PTFE in which fine particles of graphite have been encapsulated. The resulting packing provides good chemical resistance and heat dissipation plus anti-extrusion strength.

Can handle a broad range of chemicals in the 3-11 pH range. It is used in paper mill stock pumps, agitators, or any service where high strength and good lubricating qualities are needed.

Service Limits

Temperature °F (°C)
Minimum -148 (-100)
Maximum 536 (280)
Pressure psi (bar) Static 2900 (200)

Rotating 435 (30)
Reciprocating 2900 (200)
pH Minimum 2 Maximum 12
Shaft Speed f/m (m/s) Maximum 3937 (20)

Spun Aramid Yarn, PTFE Impregnated

An interlock braid, using spun aramid carded yarns, treated individually with PTFE suspensoid. The packing is also lubricated with silicone based compound for quick and easy break-in. The use of spun aramid fibers produces a softer and very tough packing, but one that is less abrasive than packings braided with aramid filaments.

Durable packing able to withstand granular and abrasive applications. It is recommended for service in superheated steam, slurries, petroleum derivatives, solvents, chemicals, liquefied gases, pulp and paper stocks, sugar syrups, and other abrasive fluids.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

Service Limits

Temperature °F (°C)

Minimum -148 (-100)

Maximum 536 (280)

Pressure psi (bar) Static 2200 (150)

Rotating 290 (20)

Reciprocating 1150 (80)

pH Minimum 2 Maximum 12

Shaft Speed f/m (m/s) Maximum 2959 (15)

Expanded PTFE Graphite Yarn with Aramid Core

An interlock braid, utilizing EGK yarn and a high temperature break-in lubricant. EGK yarn totally encapsulates a high strength aramid core in an expanded PTFE/graphite jacket. The aramid core contributes exceptional mechanical strength and dimensional stability, while the PTFE/graphite jacket provides chemical resistance, heat conductivity, self lubrication and a low coefficient of friction.

Superior general service and corrosive service packing. Its high resistance to extrusion (four times higher than conventional PTFE/graphite packings) Ideal for handling chemically aggressive fluids in high surface speed and high pressure applications.

Service Limits

Temperature °F (°C)

Minimum -148 (-100)

Maximum 536 (280)

Pressure psi (bar) Static 3600 (250)

Rotating 500 (35)

Reciprocating 3600 (250)

pH Minimum 0 Maximum 14

Shaft Speed f/m (m/s) Maximum 4921 (25) Synthetic Yarn

Synthetic Yarn with PTFE, Lubricated

An interlock braid using carded synthetic yarns thoroughly impregnated with PTFE suspenoid. The finished packing is again coated with PTFE dispersion and a break-in lubricant is added to reduce shaft wear and eliminate glazing at start up.

Excellent multi-service packing that finds a wide variety of uses throughout a plant. It handles steam, water, solvents, oils, mild acids and alkalis, and a broad range of other chemicals. It is white in color and will not discolor the flow media. This style is recommended for use in centrifugal, rotary and reciprocating pumps and also mixers, agitators, and expansion joints.

Service Limits

Temperature °F (°C)

Minimum -148 (-100)

Maximum 446 (230)

Pressure psi (bar) Static 1450 (100)

Rotating 290 (20)

Reciprocating 1160 (80)

pH Minimum 2 Maximum 12

Shaft Speed f/m (m/s) Maximum 2362 (12)



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

Meta-Aramid with PTFE and Mineral Oil

Braided from meta-aramid yarn, each strand impregnated with PTFE-dispersion during the braiding process, and lubricated with an inert mineral oil. The high mechanical strength of the meta-aramid fibre, combined with the elaborate braiding process, results in a soft and pliable packing with excellent mechanical and chemical resistance. Because of the low coefficient of friction, shaft wear is largely avoided, even at high shaft speeds. No excessive heat build-up between the packing rings and the turning shaft; the packing runs cool, remains soft and flexible, resulting in longer service life.

Recommended for all kinds of pumps, mixers, agitators, reactors, etc. for the chemical industry, pulp and paper, sewage plants, and many more.

Suitable for use with a wide variety of media in many different processes, including water, sewage, steam, solvents, chemicals, acids and caustics, as well as general service applications where a mechanically strong packing is required.

The excellent malleability makes this packing very easy to handle, and install quickly, and easily. Because the packing remains soft and flexible, leakage can be adjusted to a very low level, and readjustment of the gland follower is hardly necessary.

Not Suitable for:

Highly concentrated acids and caustics, alkali metals, oxygen.

Service Limits

Temperature °F (°C)

Minimum -148 (-100)

Maximum 554 (290)

Pressure psi (bar) Static 2900 (200)

Rotating 507 (35)

Reciprocating 2175 (150)

pH Minimum 1 Maximum 13

Shaft Speed f/m (m/s) Maximum 2950 (15)

Synthetic Yarn with Graphite, Lubricated

Interlock braid using carded synthetic yarns thoroughly impregnated with a special petroleum based lubricant and graphite.

Dense, but flexible general service packing that adapts well to worn or scored shafts often found in older equipment. It assures an excellent seal against steam, brine, oil, and mild acids and alkalis. This style is well-suited for applications in rotary and centrifugal pumps and some valves.

Service Limits

Temperature °F (°C)

Minimum -148 (-100)

Maximum 446 (230)

Pressure psi (bar) Static 290 (20)

Rotating 290 (20)

Reciprocating 725 (50)

pH Minimum 0 Maximum 14

Shaft Speed f/m (m/s) Maximum 1968 (10)



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

Novoloid Fiber, PTFE Impregnated

Interlock braid using Novoloid fibers impregnated with PTFE. In addition, the individual fibers are lubricated using a special process that assures thorough lubrication for a longer packing life.

High performance packing that is well suited to applications where graphite impregnation may not be acceptable. It can handle steam, water, acids and other chemical and solvent applications.

Has multiple uses in chemical plants and pulp and paper mills, and is regularly used in rotating and reciprocating pumps, washer journals, liquor pumps, refiners and digesters.

Service Limits

Temperature °F (°C)

Minimum -148 (-100)

Maximum 482 (250)

Pressure psi (bar) Static 1450 (100)

Rotating 362 (25)

Reciprocating 725 (50)

pH Minimum 1 Maximum 13

Shaft Speed f/m (m/s) Maximum 2952 (15)

Bushing Material

Spacer Bushing Spool Stock

SBSS utilizes carbonized fiber with Inconel® reinforcement to create an ideal packing for a spacer bushing in deep valve stuffing boxes. Thermogravimetric Analysis (TGA) has shown consistent weight loss characteristics at temperatures as high as 18320F.

Most valve packing applications recommend the use of a 5 ring packing set; however, many stuffing boxes have more depth available for packing material. The industry has commonly supplied carbon bushing to fill the extra space.

Replaces the need for carbon bushings and provides an efficient spacer from a single braided spool. It is recommended to be used in conjunction with one of the premium packing materials such as our certified low leaking technology (Flexible Graphite w/Inconel Wire Low Emission) to achieve excellent sealability.

Service Limits

Temperature °F (°C)

Maximum 1400 (230)

Pressure psi (bar) See pressure limit of primary sealing element

pH Minimum 3 Maximum 13



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

Expanded PTFE

Expanded PTFE Yarn, Dry

Firm, high density interlock braided packing manufactured from pure ePTFE filaments pretreated with PTFE dispersion, but contains no other lubricants. The PTFE dispersion provides a low friction surface finish and prevents leakage through the braid.

Style 2005 is commonly used in valves and lower shaft speed applications. It is resistant to most chemicals, aggressive fluids, gases and solvents, with the exception of molten alkali metals.

Service Limits

Temperature °F (°C)

Minimum -450 (-268)

Maximum 536 (280)

Pressure psi (bar) Static 3600 (250)

Rotating 290 (20)

Reciprocating 2150 (150)

pH Minimum 0 Maximum 14

Shaft Speed f/m (m/s) Maximum 987 (5)

Expanded PTFE Yarn, FDA Approved (Lubricated)

Firm, pliable interlock braided packing manufactured from the purest ePTFE filaments. A proprietary food grade lubricant provides faster break-in and reduced shaft wear. Complies with the F.D.A. and U.S.D.A. requirements under Title 21 Food and Drugs:

Part 177.1500 - Perfluorocarbon Resins

Part 178.3570 - Lubricants with Incidental Food Contact

Resists most caustic media and is commonly used in centrifugal and rotary food processing equipment. It is also used in blenders, mixers, cookers, dryers and pumps.

Service Limits

Temperature °F (°C)

Minimum -148 (-100)

Maximum 536 (280)

Pressure psi (bar) Rotating 290 (20)

Reciprocating 435 (30)

pH Minimum 0 Maximum 14

Shaft Speed f/m (m/s) Maximum 2350 (12)

Expanded PTFE with Graphite and Aramid Corners

Interlock braid of EG2 PTFE/graphite yarn, reinforced with high strength aramid yarn corners. EG2 yarn is formed from expanded PTFE in which fine particles of graphite have been encapsulated.

The resulting packing provides good chemical resistance and heat dissipation plus anti-extrusion strength.

Can handle a broad range of chemicals in the 3-11 pH range. It is used in paper mill stock pumps, agitators, or any service where high strength and good lubricating qualities are needed.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

Service Limits

Temperature °F (°C)

Minimum -148 (-100)

Maximum 536 (280)

Pressure psi (bar) Static 2900 (200)

Rotating 435 (30)

Reciprocating 2900 (200)

pH Minimum 2 Maximum 12

Shaft Speed f/m (m/s) Maximum 3937 (20)

PTFE FDA Premium Pump Packing

A proprietary food grade lubricant provides faster break-in and reduced shaft wear. Complies with the F.D.A. and U.S.D.A. requirements under Title 21 Food and Drugs:

Part 177.1500 - Perfluorocarbon Resins

Part 178.3570 - Lubricants with Incidental Food Contact

Due to the technological edge of its filament, that contains a special additive encapsulated by pure PTFE, and this constructive feature offers excellent heat dissipation, which is usually generated by the sealing system. The result is excellent sealability, particularly when compared with PTFE packings found in international markets.

Manufactured by an advanced method of braiding and construction, offers excellent performance, especially in segments of equipment for pulp and paper, food, chemical, pharmaceutical and sugar and alcohol.

Best packing for chemically aggressive applications and temperature gradient.

Service Limits

Temperature °F (°C)

Minimum -450 (-268)

Maximum 536 (280)

Pressure psi (bar) Rotating 290 (20)

Reciprocating 435 (30)

pH Minimum 0 Maximum 14

Shaft Speed f/m (m/s) Maximum 3920 (20)

Expanded Valve Stem Packing

Valve stem packing utilizes 100% pure expanded PTFE in a unique braid-over- braid-over-core construction with a round cross section. This unique construction produces a firm but conformable packing that handles higher pressures than competitive products.

Very workable packing which conforms easily to worn valve stems and stuffing boxes, yet forms a very high density packing when compressed. It will handle virtually all chemicals in the 0 - 14 pH range and will not contaminate flow media. It is ideal for service in the food processing, beverage and pharmaceutical industries and is also commonly used for pulp and paper and general chemical applications.

Service Limits

Temperature °F (°C)

Minimum -450 (-268)

Maximum 599 (315)

Pressure psi (bar) Static 1450 (100)

Rotating - NA

Reciprocating - NA

pH Minimum 0 Maximum 14*

*Except molten alkali metals and elemental fluorine

Shaft Speed f/m (m/s) Maximum 200 (1)



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

ePTFE/ Graphite

Expanded PTFE with Graphite

Interlock braid, utilizing EG2 PTFE/graphite yarn and a high temperature break-in lubricant. EG2 yarn is formed from expanded PTFE in which fine particles of pure graphite have been encapsulated. The resulting packing combines the chemical resistance of PTFE with the heat dissipation characteristics of graphite, thus allowing much higher shaft speeds than conventional PTFE packings.

Chemically inert over the entire 0-14 pH range with these exceptions: molten alkali metals, fluorides, aleum, fuming nitric acid, aqua regia, and other strong oxidizing agents.

Excellent general service and corrosive service packing. It is commonly used in pumps, valves, rotating and reciprocating shafts, mixers and agitators, and is especially designed for services involving surface speeds and temperatures higher than those that can be handled by pure PTFE packing.

Service Limits

Temperature °F (°C)

Minimum -328 (-200)

Maximum 536 (280)

Pressure psi (bar) Static 2900 (200)

Rotating 507 (35)

Reciprocating 1450 (100)

pH Minimum 0 Maximum 14

Shaft Speed f/m (m/s) Maximum 4921 (25)

Expanded PTFE Graphite Yarn with Aramid Core

Interlock braid, utilizing EGK yarn and a high temperature break-in lubricant. EGK yarn totally encapsulates a high strength aramid core in an expanded PTFE/graphite jacket. The aramid core contributes exceptional mechanical strength and dimensional stability, while the PTFE/graphite jacket provides chemical resistance, heat conductivity, self lubrication and a low coefficient of friction.

Superior general service and corrosive service packing. Its high resistance to extrusion (four times higher than conventional PTFE/graphite packings) ideal for handling chemically aggressive fluids in high surface speed and high pressure applications.

Service Limits

Temperature °F (°C)

Minimum -148 (-100)

Maximum 536 (280)

Pressure psi (bar) Static 3600 (250)

Rotating 500 (35)

Reciprocating 3600 (250)

pH Minimum 0 Maximum 14

Shaft Speed f/m (m/s) Maximum 4921 (25)



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

Ramie

Ramie Yarn, Paraffin Impregnated

Braided with high quality ramie yarns in a square plait construction. The yarns are heavily impregnated throughout with paraffin and mineral oil.

Well lubricated, medium-hard packing with extremely low frictional characteristics, which assures minimal shaft wear.

The ramie yarn is rot and mildew resistant, making the packing ideal for marine use, handling cold water, salt water, and cold oils. In the marine industry, it is commonly used in stern tubes, rudder posts, and tail shaft liners. This style is also used in the pulp and paper, waste/wastewater, steel and mining industries.

Service Limits

Temperature °F (°C)

Minimum - NA

Maximum 212 (100)

Pressure psi(bar) Static 290 (20)

Rotating 217 (15)

Reciprocating 217 (15)

pH Minimum 6 Maximum 8

Shaft Speed f/m (m/s) Maximum 1181 (6)

Ramie Yarn, Graphited Packing

Braided with high quality ramie yarns in a square plait construction. The yarns are heavily treated with a petroleum based lubricant and graphite.

Well lubricated, medium-hard packing with very low frictional characteristics, which assure minimal shaft wear. The ramie yarn is rot and mildew resistant, making the packing ideal for marine use, handling cold water, salt water, and cold oils. In the marine industry it is commonly used in stern tubes, rudder posts, and tail shaft liners.

This style packing is also used in the pulp and paper, water/wastewater, and mining industries where a softer packing is desired for lower pressure hydraulic applications.

Service Limits

Temperature °F (°C)

Minimum - NA

Maximum 212 (100)

Pressure psi(bar) Static 290 (20)

Rotating 217 (15)

Reciprocating 217 (15)

pH Minimum 6 Maximum 8

Shaft Speed f/m (m/s) Maximum 1181 (6)



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

MECHANICAL PACKING

Ramie Yarn, PTFE Impregnated

Manufactured from the finest quality ramie yarns with PTFE suspensoid in a square plait construction. An additional break-in lubricant is added to minimize shaft wear and to allow for expansion during the break-in period.

Well lubricated, medium-hard packing with very low frictional characteristics, which assures minimal shaft wear. The ramie yarn is rot and mildew resistant, making the packing ideal for marine use, handling cold water, salt water and cold oils. In the marine industry, it is recommended for sealing stern tube and rudder post stuffing boxes. This style is also used for certain pump and valve applications in the pulp and paper, water/wastewater, and mining industries.

Service Limits

Temperature °F (°C)

Minimum - NA

Maximum 266 (130)

Pressure psi (bar) Static 450 (30)

Rotating 290 (20)

Reciprocating 290 (20)

pH Minimum 5 Maximum 11

Shaft Speed f/m (m/s) Maximum 1968 (10)



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

H&H SEAL AND PRODUCTS

Gaskets and Packings

METALLIC GASKETS PACKING



223 HOUSE ST.
ALVIN, TX 77511

(832) 802-3083
HHSEALPRODUCTS.COM

Gaskets and Packings

METALLIC GASKETS PACKING

Spiral Wound Gaskets

Spiral Wound Styles

911/911T

This is simplest style of spiral wound gasket, consisting of a circular winding without centering or inner rings. Spiral wound gaskets Style 911 are mainly used in tongue and groove or male and female. They are also used in equipment with space and weight limitations.

Style 911-T has better sealability than a conventional heat exchanger double-jacketed gasket. However, a specially machined groove with an appropriate compression stop is needed for 911-T.

911M

A style 911-M gasket is a sealing winding with an inner ring. The purpose of this ring is to fill out the space between the flanges, avoiding turbulence in the flow of the fluid or as a protection against corrosion or erosion. It is also used as a compression limit when the seating stress is greater than 30,000 psi (210 MPa).

Gaskets with PTFE filler have a tendency to inward buckle thus the use of an inner ring is recommended if the gasket is to be installed with a non-confined inside diameter.

913

The construction of this gasket is circular metal winding with an outer guide ring. The sealing element is made of the specified metal and soft sealing material. The standard pipe size gaskets are made to ASME B16.20 (see also style 913M). These gaskets are used in a very wide variety of applications.

913M

The 913M is the standard spiral wound gasket with an inner ring. The purpose of this ring is to fill out the space between the flanges, avoiding turbulence in the flow of the fluid or as protection against corrosion or erosion. It is also used as a compression limit. Gaskets with PTFE filler have a tendency to inward buckle thus the use of an inner ring is required by ASME B16.20. Inner rings are also required with ASME standard spiral wound gaskets with flexible graphite fillers unless the purchaser specifies otherwise and some sizes and pressure class require inner rings regardless of filler material.

914

Style 914 spiral wound gaskets are windings in non-circular forms like oval, rectangular and square with rounded corners, diamonds, oblong or pear shaped. Style 914 gaskets are used in boiler handholes and manholes, equipment, engine head-gaskets and exhaust systems. Inner rings should also be used for many of these applications.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

METALLIC GASKETS PACKING

WINDING

Material	O.D. Ring Color
304 Stainless Steel	Yellow
316L Stainless Steel	Green
317L Stainless Steel	Maroon
321 Stainless Steel	Turquoise
347 Stainless Steel	Blue
Monel®	Orange
Nickel	Red

Material	O.D. Ring Color
Titanium	Purple
Alloy 20	Black
Inconel®600	Gold
HASTELLOY® B	Brown
HASTELLOY® C	Beige
INCOLOY® 800	White

FILLER

Material	Strip Color
PTFE	White
Flexible Graphite	Gray
Ceramic	Lt. Green

Low Emission Spiral Wound

913M-LE

The Metalflex 913M-LE spiral wound gasket is a major improvement on the traditional ASME B16.20 design. Where the traditional design is based primarily on dimensional criteria, the 913M-LE takes this and adds proven low-emission performance. Research & Development has discovered that density of the sealing element, a well-defined preformed metallic strip, and an enhanced soft filler material configuration, along with mandatory outer and inner rings, together play key roles in achieving sealing ability which can meet even the most stringent fugitive emission requirements. Furthermore, the design provides low-emission performance at a level significantly below the minimum ASME seating stress rating for spiral wound gaskets – making the 913M-LE a truly low seating stress design!

- Reliability - High Pressures
- Sealability - Very Low Emission

Spiral Wound: Conventional vs. New Technology - Metalflex 913M-LE
Increase of metal windings, higher density

Material and Dimension per ASME B 16.20.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

METALLIC GASKETS PACKING

Camprofile

Excellent Results in Critical Applications

Camprofile gaskets offer outstanding flexibility, assuring seal integrity under pressure and temperature fluctuations, flange rotation, bolt stress relaxation and creep.

Camprofile gaskets are used by the chemical and petrochemical industry, as well as in power stations and refineries, on both standard pipework and special applications, e.g. shell and tube heat exchangers, etc.

Camprofile gaskets are constructed from a precision serrated metallic core with soft facing materials - flexible graphite or expanded PTFE - bonded to either side.

Depending on the kind of metal used, Camprofile gaskets can be used for all media from pH 0 to 14.

Materials

The core material should be chemically and thermally compatible with the fluid to be sealed. If possible, the core metal should be the same as used to manufacture the flanges to avoid corrosion or differential Thermal Expansion.

Facing

The most widely used covering material is Flexible Graphite. For operational conditions where Flexible Graphite is not recommended Expanded PTFE is used.

The chart below shows the Temperature and Pressure limits for the cover materials.

Table 1

Facing Materials Temperature and Pressure Limits

Material	Temperature °F (°C)		Pressure psi (bar)
	min	max	max
Standard Flexible Graphite	-400 (-240)	840 (450)	5000 (345)
High Temperature Flexible Graphite	-400 (-240)	1200 (650)	5000 (345)
Mica Paper	-58 (-50)	1830(1000)	725 (50)
24BB ePTFE	-400 (-240)	500 (260)	1500 (100)

For oxidizing atmospheres the temperature limit for Graphite is 842°F (450°C).



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

METALLIC GASKETS PACKING

Pressure and Temperature Limits

The Pressure and Temperature range is related to the range of each component. The Service Range is the combination of the limit for the metal and facing limits. For example, ®Camprofile Style 942 with Carbon Steel core and Standard Flexible Graphite facing has the following limits:

Maximum Pressure:
5000 psi (345bar)
-400°F to 842°F (-240°C to 450°C)

Bolting Calculation

Metal	Facing	"m"	"y" (psi)
SS, Inconel, Monel	Flexible Graphite	4	4500
	PTFE	4	4500
	Mica Paper	8	5900

Corrugated Gaskets

905 Metalbest (corrugated Metal/Graphite Faced)

Style 905 Metalbest is a corrugated gasket style 900 metal core with Flexible Graphite facings (see figure below). It combines the sealing properties of the Flexible Graphite with the extrusion resistance of the corrugated metal core. The main advantage for using a 905 Metalbest is that it provides an extremely effective seal under low bolt loads. This makes the gasket ideal for applications where the available loading is determined to be low and unsuitable for spiral wound or other type of gasket requiring high seating stress. It is designed to maintain a positive seal through thermal cycling and shock load conditions. These gaskets have passed an industry fire test, a relative indicator of the gasket's ability to resist fire conditions.

The standard material for the metal core is Austenitic Stainless Steel. Other alloy are available upon request.
Style 905 Metalbest Gaskets for Heat Exchangers

One of the most frequent uses of Style 905 Metalbest Gaskets are in Shell and Tube Heat Exchangers, due to their ability of to avoid mechanical shearing problems associated other gasket types in heavy thermal cycling applications. The standard core material is Austenitic Stainless Steel and the covering layer is Flexible Graphite. Other alloys are available upon request.

For customers requiring expanded PTFE facing material instead of graphite, style 905-ePTFE is available in thicknesses as required.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

METALLIC GASKETS PACKING

Jacketed Gaskets

A Jacketed Gasket is comprised of a soft pliable core inside a metallic jacket.

Metallic Jacket

Almost any metal or alloy found in sheet form can be used as a jacket; its choice must take into consideration the fluid to be sealed. The metallic jacket is 0.016 in (0.4mm) to 0.020 in (0.5mm) thick.

Design

The following recommendations are based on successful practical applications: Gaskets confined by the inside and outside diameters: Gasket inside diameter = groove inside diameter plus 1/16 in (1.6 mm).

Gasket outside diameter = groove outside diameter less 1/16 in (1.6 mm).

Gaskets confined by outside diameter:

Gasket inside diameter = flange inside diameter plus a minimum of 1/8 in (3.2 mm).

Gasket outside diameter = groove outside diameter less 1/16 in (1.6 mm).

Non confined gaskets:

Gasket inside diameter = flange inside diameter plus 1/8 in (3.2 mm).

Gasket outside diameter = bolt circle diameter less bolt diameter.

Filler

The standard filler material is Flexible Graphite. Other fillers like ceramic, PTFE or another metal (corrugated, flat, or serrated) can be used.

Style 923 and 927

The style 923 (Figure 1) is a flat double jacket gasket. Its most typical applications are in Heat Exchangers. ASME B 16.20 shows the gasket dimensions for ANSI B 16.5 flanges. The standard thickness is 1/8 in (3.2 mm). This style is also used in large size reactors in chemical plants. Another important use is for flanges in the large, low pressure ducting in Steel Mill Blast Furnaces. To compensate for distortions and irregularities of these flanges gaskets have the thickness from 5/32 in (4 mm) to 1/4 in (6 mm).

Style 927 (Figure 2) is similar to style 923 with addition of flexible graphite facing.

Style 920

The style 920 is a round single jacket gasket. Used in applications where the seating stress and width are limited. It can be manufactured in circular or oval shape. The maximum gasket width is 1/4 (6.4 mm) and the standard thickness is 3/32 in (2.4 mm).



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

METALLIC GASKETS PACKING

Style 926

Style 926 is similar to style 923 but the metallic jacket is corrugated. The corrugations act as a labyrinth. The filler material is typically flexible graphite, or other soft materials.

Style 929

Style 929 is similar to style 926 with a corrugated metallic filler. Used in applications where it is necessary to have a gasket without non-metallic materials, temperature limits and chemical resistance depend upon of the metal only.

“M” and “y” Value

Style	Gasket Material	"m"	"y"(psi)
Style 920, 923	Iron or Soft Steel	3.75	7600
	Monel	3.50	8000
	Stainless Steels	3.75	9000
Style 926	Iron or soft steel	3.00	4500
	Monel or 4-6% chrome	3.25	5500
	Stainless Steels	3.50	6500
Style 929	Any Metal with FG Facing*	3.5	6500

Solid Metallic Gasket

Style 940

Style 940 is a solid metallic gasket that has a smooth sealing surface and can be manufactured practically in any shape. Typical applications are in valves, heat exchangers, hydraulic presses and tongue and groove flanges. The strong points are mechanical and chemical attack resistance and they can be used in elevated temperature and pressure service. The width of the gasket sealing surface should be at least equal to 1.5 times its thickness. These gaskets, depending upon their material, have high maximum seating stress.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

METALLIC GASKETS PACKING

Metallic Materials & Filler/Facing

The following are our most widely used alloys in manufacturing industrial gaskets, their major characteristics, temperature limits and approximate Brinell hardness (HB).

Carbon Steel

Material frequently used in manufacturing jacketed gaskets and Ring Joints. Due to its low resistance to corrosion it should not be used in water, diluted acids or saline solutions. It may be used in some alkalis and in some concentrated acids. Temperature limit 900° F (500° C).

Approximate Hardness: 90 to 120 HB.

Stainless Steel AISI 304

Alloy with 18% Cr and 8% Ni is the material most used in the manufacturing of industrial gaskets due to its excellent resistance to corrosion, low cost and availability in the market. Its maximum operating temperature is 1400° F (760° C). Due to Stress and Intergranular Corrosion, its continuous service temperature is limited to 790° F (420° C).

Approximate Hardness: 160 HB.

Stainless Steel AISI 304L

It has the same resistance to corrosion as the AISI 304. Since its Carbon content is limited to 0.03%, it has less Intergranular Carbon precipitation and therefore less Intergranular Corrosion. Its operational limit for continuous service is 1400° F (760° C). It is susceptible to Stress Corrosion.

Approximate Hardness: 160 HB and in some cases, 140 HB.

Stainless Steel AISI 316

This alloy with 18% Ni, 13% Cr and 2% Mo, offers excellent resistance to corrosion. It can have carbonate precipitation at temperatures between 860° F (460° C) and 1650° F (900° C), under severe corrosion conditions. Maximum recommended temperature for continuous service is 1400° F (760° C).

Approximate Hardness: 160 HB.

Stainless Steel AISI 316L

It has the same chemical composition as the AISI 316 but its Carbon content is limited to 0.03%, which inhibits the Intergranular Carbon precipitation and consequently, the Intergranular Corrosion. The maximum service temperature is 1400° F (760° C).

Approximate Hardness: 160 HB.

Stainless Steel AISI 321

Austenitic stainless steel alloy with 18% Cr and 10% Ni stabilized with Ti, which reduces the Intergranular Carbon precipitation and also the Intergranular Corrosion. It can be used in temperatures up to 1500° F (815° C).

Approximate Hardness: 160 HB.

Stainless Steel AISI 347

Alloy similar to the AISI 304 stabilized with Cb and Ta to reduce carbonate precipitation and Intergranular Corrosion. It is subject to Stress Corrosion. Has good performance in high temperature corrosive service. Maximum temperature: 1550° F (815° C).

Approximate Hardness: 160 HB.

Monel

Alloy with 67% Ni and 30% Cu, it offers excellent resistance to the majority of acids and alkalis, except to extremely oxidant acids. Subject to stress corrosion and therefore should not be used in the presence of fluorine-silicon acid and Mercury. In combination with PTFE, it is used frequently in spiral wound gaskets for



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

METALLIC GASKETS PACKING

severe corrosion services, such as Hydrofluoric acid.
Operating maximum temperature: 1500° F (815° C).

Approximate Hardness: 95 HB.

Nickel 200

Alloy with 99% Ni, offers great resistance to caustic solutions, even though it does not have the same global resistance of Monel. It is also used in spiral wound and jacketed gaskets for special applications.
Maximum operating temperature: 1400 F (760° C).

Approximate Hardness: 110 HB.

Copper

Material often used in small dimension gaskets, where the maximum seating stress is limited. Maximum operating temperature: 500° F (260° C).

Approximate Hardness: 80 HB.

Filler/Facing

Filler/Facing Materials for Metal Gaskets

In addition to the filler/facing materials offered in the metallic gasket product section we offer the following high temperature materials.

SGL® SIGRAFLEX Type APX2 Flexible Graphite

Flexible Graphite with advanced oxidation inhibition & excellent sealability

MICA

Phlogopite Hi-Temp grade to 1832°F (1000°C). Used in some hot gas applications, and as filler/facing for spiral wound & camprofile gaskets and as an oxidation barrier in combination with other sealing materials.

Ceramic Fiber

Used in some hot gases/ low pressure service. This material is also used as filler for metallic gaskets or in combination with other sealing materials.
Temperature limit: 2000°F (1090°C).

Aluminum

Due to its excellent resistance to corrosion and easy handling it is very often used in manufacturing gaskets.
Maximum service temperature: 860° F (460° C).

Approximate Hardness: 35 HB.

Inconel

Alloy with 77% Ni, 15% Cr and 7% Fe, it has excellent corrosion resistance from cryogenic to high temperatures. Temperature limit: 2000° F (1100° C).

Approximate Hardness: 150 HB.

Titanium

Metal with excellent corrosion properties in elevated temperatures, oxidant service, Nitric acid and caustic solutions. Temperature limit: 2000° F (1100° C).

Approximate Hardness: 215 HB.

XHR

Extreme heat resistance. Uses combination of mica barriers and APX2 to provide exceptional sealing ability to 1500°F (815°C).

PTFE

Polytetrafluoroethylene provides superior chemical resistance and great sealing ability. Typically rated to approximately 500°F (260°C).

Flexible Graphite

Provides soft conforming material in fire-safe design with excellent chemical resistance. Typically rated to 842°F (450°C).



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

H&H SEAL AND PRODUCTS

Gaskets and Packings

NON-METALLIC GASKETS PACKING



223 HOUSE ST.
ALVIN, TX 77511

(832) 802-3083
HHSEALPRODUCTS.COM

Gaskets and Packings

NON-METALLIC GASKETS PACKING

PTFE

Expanded PTFE Joint Sealant

Made from 100% pure, expanded, virgin PTFE. The whole production process is subject to strict quality control, registered under DIN EN ISO 9001. Because of the excellent thermal and chemical resistance, it can be used in a wide variety of static applications in nearly all kinds of industry.

The exceptional malleability of expanded PTFE can compensate for out-of-parallel and/or damaged sealing surfaces and allows use with stress sensitive connections and applications where only a limited flange load is available, e.g. plastic flanges, glass flanges, etc.

Typical applications are the sealing of flanges, pump housings, compressors, hand- and manholes, air ducts, compensators, heat exchangers and many more.

Service Limits

Temperature°F (°C)

Minimum: -450 (-268)

Short Term Max Temp 600 (315)

Pressure psi (bar) 2900 (200)

pH Minimum: 0 Maximum: 14

Approvals

BAM

DVGW

WRc

BOC

FDA (Incl. adhesive backing)

TA-Luft

AREVA

Expanded PTFE Gasket Tape

Made from 100% pure, expanded, virgin PTFE. The whole production process is subject to strict quality control, registered under DIN EN ISO 9001.

Because of the excellent thermal and chemical resistance, it can be used in a wide variety of static applications in nearly all kinds of industry. The exceptional malleability of expanded PTFE can compensate for out-of-parallel and/or damaged sealing surfaces and allows use with stress sensitive connections and applications where only a limited flange load is available, e.g. plastic flanges, glass flanges, etc.

Typical applications are the sealing of flanges, housings of pumps, gearboxes and compressors, hand- and manholes, air ducts, compensators, heat exchangers, chemical reactors, and many more.

Gaskets can be cut and/or punched, which can be installed in areas where there is not enough room to install a gasket tape.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F(°C)
Minimum: -450 (-268)
Short Term Max Temp 600 (315)
Pressure psi (bar) 2900 (200)
pH Minimum: 0 Maximum: 14

Approvals

WRc

Multi-Directionally Expanded PTFE Gasket Tape

Multidirectionally expanded gasket-tape, produced from 100% pure PTFE (Polytetrafluorethylene). The whole production process is subject to strictest quality control, registered under ISO 9001.

Due to its excellent malleability and adaptability – is particularly well suited to compensate for irregularities or damages on the sealing areas, as well as for all stress-sensitive joints. A special manufacturing process results in almost equal tensile strength in both the longitudinal and cross direction. As a result of this, the material does not change its width under compression. This is in stark contrast to normal expanded PTFE tapes!

Because of this property, is extremely well suited as a gasket material for narrow sealing areas and in all applications where a defined gasket width (under load) is required.

Typical applications are enamelled and glass flanges, heat exchangers, large flanges and containers, pressure vessels, suction filters and strainers, etc.

Service Limits

Temperature °F (°C)
Minimum -450 (-268)
Short Term Max Temp 600 (315)
Pressure psi (bar) 2900 (200)
pH Minimum: 0 Maximum: 14

Approvals

FDA
TA-Luft

100% Expanded PTFE Sheet

Large gasket sheet produced from 100% pure, multi-directionally expanded PTFE.

Universally employable gasket sheet for all applications. It is suitable for all types of flanges, nearly all media, a wide temperature range and for applications with the toughest demands on purity. It is inherently clean and non-toxic.

Gaskets of multi-directionally expanded PTFE have exceptional mechanical strength which allows operation with minimal creep at elevated temperatures.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

The excellent malleability makes repairing small damage and/or irregularities of the sealing area (flange surface) unnecessary.

Gaskets are dimensionally stable, i. e. they do not get wider when compressed. This allows narrow flange faces to be sealed safely.

Quick and simple to install. The used gasket can be removed easily and without residue.

Approvals

TA-Luft
Blow-Out-Test VDI 2200
FDA
USP Plastic Class VI
Germanischer Lloyd
WRc
BAM
AREVA

Service Limits

Temp. °F (°C)
Minimum: -450 (-268)
Short Term Max Temp: 600 (315)
Pressure psi (bar) 2900 (200)
pH Minimum: 0 Maximum: 14

Tealon

Tealon | Blue

Tealon is filled with glass microspheres and is suitable for aggressive chemical applications. It meets FDA conformance for service within food and pharmaceutical applications.

Preferred material for fragile flanges, glass lined equipment or other applications that require higher compressibility.

Approvals

DVGW — TA-Luft — FDA

Tealon | White

Tealon (White) is filled with barium sulfate and is suitable for strong caustic fluids. It meets FDA conformance for service within food and pharmaceutical applications.

Can be used in a wide range of applications due to its vast resistance to most chemical products. It is compatible with strong acids along with strong caustics, making it the most diverse material within the Tealon family.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

With the white color of this material is also suitable for processes where contamination is not tolerated. Meets and has been approved by BAM for oxygen service.

Approvals

DVGW — TA-Luft — FDA — BAM — Chlorine Institute

Tealon | Fawn

Tealon (Fawn) is filled with silica and meets a wide range of applications. It is suitable for general service, strong acids and moderate caustic solutions. It meets FDA conformance for service within food and pharmaceutical applications.

Easily passed the Hot Compression Test with outstanding results.

Approvals

DVGW — TA-Luft — FDA — Chlorine Institute

Hot Compression Test

This performance test measures the behavior of rPTFE and PTFE gaskets in a real world environment. The chart below shows a comparison between conventionally skived PTFE and Tealon.

The gaskets we tested simulated a real world application including thermo-cycling. The skived PTFE gasket showed a very high leak rate, losing 60% of its initial pressure by the end of the test.

The Tealon® gasket lost only 6% of its initial pressure by the end of the test and showed a leak 10 times less than that of the skived PTFE gasket. The pictures below, show the gaskets after the test and exhibit the dimensional stability of Tealon as compared to the noticeable creep of the skived PTFE gasket.

Thermo-Cycling Leak Test

Temperature cycles from 30° C to 200° C, with seating stress of 5000 psi and using a gasket thickness of 1/8”.

ASTM tests are based on 1/32” sheet thickness.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Restructured PTFE and Glass Spheres

Drinking Water Service

TEALON SAN is suitable for service with a wide variety of aggressive media, but is specifically formulated to allow compliance for drinking water system components with NSF-61, from source to tap. Certification to NSF-61 provides assurance to a highest level that is safe for use in drinking water service.

The high compressibility of this style makes it particularly suitable for use with stress sensitive and/or fragile flanged joints, e.g. glass, ceramics, plastic, etc.

Isolation

An added benefit is that has a strong dielectric rating, making it suitable for isolation kit applications.

Construction

TEALON is a structured PTFE - Gasket - Sheet manufactured by a unique process which provides a high level of fibrillation to overcome the creep relaxation and cold flow problems associated with normal (skived or molded) PTFE sheets. This style is produced from virgin PTFE resin filled with hollow glass microspheres.

Service Limits

Temperature °F (°C)

Minimum Service: -450 (-268)

Maximum Service: 500 (260)

Pressure psi (bar) Maximum Service: 800 (55)

Typical Physical Properties:	
Compressibility - ASTM F36A	30-50%
Recovery - ASTM F36 A	30%
Tensile Strength - ASTM F152	2030 psi (14N/mm ²)
Specific Gravity - ASTM D792	1.70 g/cm ³
Creep Relaxation - ASTM F38	40%
Sealability - ASTM F37 A	0.12 ml/h
Sealability - DIN 3535	< .015 cm ³ /min
ASTM test are based on 0.80mm sheet thickness and DIN test is based on 1.50mm sheet thickness TEALON is a trademark of E.I. DuPont De Nemours and Company and is used under license by Teadit.	



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Restructured PTFE for Monomer Service

Structured PTFE - Gasket - Sheet manufactured by a unique process, which provides a high level of fibrillation to overcome the creep relaxation and cold flow problems associated with normal (skived or molded) PTFE sheets. This style is produced from virgin PTFE resin without fillers or additives.

Due to the product's low permeability it is recommended for application where media permeation through the gasket is not acceptable. For example, monomer is polymerizing on the gasket ID eventually blocking the line and swelling the gasket. Quick and simple to install. The gasket can be removed easily after use and without residue.

- Restructured without filler
- Better creep properties
- Better torque retention
- Low porosity PTFE resin
- High sealability

Service Limits

Temperature °F (°C)	Minimum: -450 (-268)	Maximum: 500 (260)
pH	0-14	
Available Sheet Size	40"x40"	
	Thickness	1/16", 1/8", 1/4"
	Color	White

Physical Property	Type of Test	TF1560
Sealability (ml/h) - 0.7 bar	ASTM F 37A	< 0.1
Creep Relaxation (%)	ASTM F 38	60
Compressibility(%)	ASTM F 36A	10
Recovery Min. (%) - minimum	ASTM F 36A	60
Density (g/cm3)	ASTM F 1315	2.15

NA 1500 Virgin PTFE Sheet

Style NA1500 PTFE (polytetrafluoroethylene) is a high molecular weight polymer and one of the most versatile plastics known to man. Style 1500 virgin PTFE sheet can handle virtually all chemicals in the 0-14 pH range with the exception of molten alkali metals and elemental fluorine. It is suitable for service at temperatures from the cryogenic range up to 500°F.

This style is particularly recommended for applications in the food and beverage industry where high purity materials are required. It is also used where contamination or discoloration of flow media cannot be tolerated.



223 HOUSE ST.
ALVIN, TX 77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	Minimum: -328(-200)	Maximum: 500 (260)
Available Sheet Size	48"x48"	60"x60"
	48"or 60" wide continuous rolls	
Thickness	1/64", 1/32", 1/16", 3/32", 1/8", 3/16", 1/4"	
Color	White	

NA 1525 25% Glass Filled PTFE

Style NA1525 PTFE (polytetrafluoroethylene) is a high molecular weight polymer and one of the most versatile plastics known to man. This PTFE sheet is filled with 25% glass fibers by weight. The filled material significantly reduces cold flow and creep and increases wear resistance compared to unfilled PTFE sheet. It can handle a very broad range of chemicals with the exception of molten alkali metals and elemental fluorine. This style is suitable for service at temperatures from the cryogenic range up to 500°F.

Service Limits

Temperature °F (°C)	Minimum: -328(-200)	Maximum: 500 (260)
Available Sheet Size	48"x48"	60"x60"
	48"or 60" wide continuous rolls	
Thickness	1/64", 1/32", 1/16", 3/32", 1/8", 3/16", 1/4"	
Color	White	

Typical Physical Properties:	
Tensile Strength at 73°F - ASTM D638-61T	2000-3000 psi
Elongation - ASTM D638-61T	D55.5
Dielectric Strength in Air - ASTM D257-61	235 volts/mil.

NA 1550 Mechanical Grade PTFE Sheet

Style NA1550 PTFE (polytetrafluoroethylene) is a high molecular weight polymer and one of the most versatile plastics known to man. This sheet can handle virtually all chemicals in the 0-14 pH range with the exception of molten alkali metals and elemental fluorine. It is suitable for service at temperatures from the cryogenic range up to 500°F. This sheet is particularly recommended for applications in the industrial and process industries where high purity materials are not required. It is more economical than virgin PTFE sheet and the physical properties are only somewhat less than those of virgin PTFE.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	Minimum: -328(-200)	Maximum: 500 (260)
Available Sheet Size	48"x48"	60"x60"
	48"or 60" wide continuous rolls	
Thickness	1/64", 1/32", 1/16", 3/32", 1/8", 3/16", 1/4"	
Color	White	

Typical Physical Properties:	
Tensile Strength at 73°F - ASTM D638-61T	1500-2400 psi
Elongation - ASTM D638-61T	75-200%
Dielectric Strength in Air - ASTM D257-61	450 volts/mil.

EcoTape - Thread seal tape made from Expanded PTFE combined with Graphite

ECOTape-LE® is manufactured to provide an advanced structural matrix which incorporates Graphite into the Expanded PTFE. Due to the excellent properties of PTFE and graphite, this combination ensures a wide degree of chemical resistance, low coefficient of friction, excellent heat dissipation due to the high thermal conductivity of graphite and superior mechanical resistance.

Our unique manufacturing process provides the final product a high degree of integrity proven to supply the best sealing solution for thread seal tape.

- ZERO Emissions
- ENVIRONMENTAL Protection

Service Limits

Temperature °F (°C)	
Minimum:	-400 (-240)
Maximum:	518 (270)
Short Term:	590 (310)

Pressure psi (bar) Maximum: 2900 (200)pH Minimum 0 Maximum:14



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Compressed Fiber Sheet

NA1001 Compressed Sheet with Aramid Fibers, NBR Binder

Style NA1001 is a very good general service gasket material that has numerous applications in the process industries and in the water and wastewater industry. It is also commonly used in equipment such as valves and pumps. Style NA1001 is suitable for service handling the following general media categories:

- Mild inorganic acids
- Diluted alkalis
- Aliphatic solvents
- Synthetic oils
- General chemicals
- Mild organic acids
- Water
- Industrial oils
- Vegetable oils
- Vegetable Solutions
- Refrigerants
- Brine
- Animal oils
- Petroleum and Derivatives
- Air

Construction

Style NA1001 is a compressed non-asbestos sheet gasket material produced from a combination of aramid and other synthetic fibers and bonded with nitrile rubber (NBR). It is manufactured through the hot calendar process under rigorous quality control standards that are registered under ISO-9001 certification.

Service Limits

Temperature °F (°C)	
Continuous Service:	464 (240)
Maximum Service:	750 (400)

Pressure psi (bar)	
Continuous Service:	725 (50)
Maximum Service:	1595 (110)

Typical Physical Properties:	
Density	109 lb/ft ³ (1.75 g/cm ³)
Compressibility - ASTM F36	7-17%
Weight Increase - ASTM F146 - after 5hr	
- ASTM Oil IRM903 @ 300°F (150°C)	max 15%
- Fuel B, @ 77°F (25°C)	max 15%
Creep Relaxation - ASTM F38	25%
Torque Retention (DIN 52913)	28N/mm ²
Sealability @ 1000psi - ASTM F37	max .25 ml/hr

Recovery - ASTM F36	min 45%
Tensile Strength Across Grain - ASTM F38	1670psi (11.5 N/mm ²)
Ignition Loss - ASTM F495	max 34%
Thickness Increase - ASTM F146 - after 5hr	
- Fuel B, @ 77°F (25°C)	max 10%
- ASTM Oil IRM 903 @ 300°F (150°C)	max 12%



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

NA1082 SAN Sanitary Service Gasket Material

Drinking Water Service

NA1082SAN is developed to allow compliance for drinking water system components with NSF-61, from source to tap. Certification to NSF-61 provides assurance to a highest level that NA1082SAN is safe for use in drinking water service.

Isolation

An added benefit is that 1082 SAN has a strong dielectric rating, making it ideal for isolation kit applications where compressed fiber sheet gaskets can be utilized.

Construction

NA1082SAN is specifically formulated to pass criteria established in NSF-61 for sealing materials, as well as providing excellent resistance to conductivity. Compressed Fiber Sheet technology provides mechanical and service characteristics unmatched by standard elastomeric grades.

Service Limits

Temperature °F (°C)	
Continuous Service:	500 (260)
Maximum Service:	752 (400)

Pressure psi (bar)	
Continuous Service:	1160 (80)
Maximum Service:	1595 (110)

Typical Physical Properties:	
Dielectric Strength - ASTM D149	18.5 kv/mm (1/16" thk)
Density	121 lb/ft ³ (1.95 g/cm ³)
After 1 hour at 210°F	(100°C)
Compressibility - ASTM F36	5-15%
Recovery - ASTM F36	50%
Tensile Strength Across Grain - ASTM F152	1885 psi (13N/mm ²)

Thickness Increase - ASTM F146	
ASTM Oil IRM903 Nr. 3 5h / 300 °F (150°C)	15%
Fuel B, 5h / 77 °F (25°C)	10%
Weight Increase - ASTM F146	
ASTM Oil IRM903 Nr. 3 5h / 300 °F (150°C)	15%
Fuel B, 5h / 77 °F (25°C)	10%

NA1076 Compressed Sheet with Aramid Fibers, Neoprene Binder

Style NA1076 sheet is a good all purpose sheet that is specifically formulated to handle a broad range of refrigerants. In addition, Style 1076 is suitable for services handling water, saturated steam, oils, fuels, mild acids and alkalis.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Construction

Style NA1076 is a compressed non-asbestos sheet gasket material produced from a combination of aramid and other synthetic fibers and bonded with neoprene rubber (CR). It is manufactured through the hot calender process under rigorous quality control standards that are registered under ISO-9001 certification.

Service Limits

Temperature °F (°C)	
Continuous Service:	392
Maximum Service:	698 (370)
Color	Black

Pressure psi (bar)	Vacuum to 725 (50)
Availability	59 x 63 in & 59 x 126 in
Thickness	1/64", 1/32", 1/16", 3/32", 1/8"
ASTM F104	F104-F712120-B4E99M9

Typical Physical Properties:	
Density	106 lb/ft ³ (1.70 g/cm ³)
Compressibility - ASTM F36	7-17%
Recovery - ASTM F36	46%
Tensile Strength Across Grain - ASTM F38	1740 psi

Thickness Increase - ASTM F146 - after 5hr	
Fuel B, @ 77°F (25°C)	≤20%
ASTM Oil IRM 903 @ 300°F (150°C)	≤30%
Weight Increase - ASTM F146 - after 5hr	
Creep Relaxation - ASTM F38	20%
Fuel B, @ 77°F (25°C)	≤20%

NA1080 Compressed Sheet with Aramid Fibers, SBR Binder

Style NA1080 has numerous applications in the process industries handling media like: mild acids and alkalis, water, brine, saturated steam, air, industrial gases, general chemicals, neutral solutions.

Construction

Style NA1080 is a compressed non-asbestos sheet gasket material produced from a combination of Aramid Fiber, Inorganic Fillers and bonded with Styrene-Butadiene Rubber (SBR). It is manufactured under rigorous quality control standards that are registered under ISO-9001 certification.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	
Continuous Service:	518 (270)
Maximum Service:	716 (380)
Availability	59 x 63 in & 59 x 126 in
Color	Off White

Pressure psi (bar)	
Continuous Service:	735 (50)
Maximum Service:	1015 (70)
Thickness	1/64", 1/32", 1/16", 3/32", 1/8"
ASTM F104	F712940E44M5

Typical Physical Properties:	
Density	122 lb/ft ³ (1.96 g/cm ³)
Compressibility - ASTM F36	7-17%
Recovery - ASTM F36	45%
Tensile Strength Across Grain - ASTM F38	2030psi (14 N/mm ²)
Ignition Loss - ASTM F495	28%
Thickness Increase - ASTM F146 - after 5hr	
Fuel B, @ 77°F (25°C)	20%
ASTM Oil IRM 903 @ 300°F (150°C)	40%

Weight Increase - ASTM F146 - after 5hr	
ASTM Oil IRM903 @ 300°F (150°C)	30%
Creep Relaxation - ASTM F38	22%
Fuel B, @ 77°F (25°C)	30%
Torque Relaxation	37N/mm ²
Sealability @ 1000psi - ASTM F37	.25 ml/hr

NA1081 Premium Compressed Sheet with Aramid Fibers, NBR Binder

Style NA1081 has numerous applications in the process industries handling media like: mild acids and alkalis, water, hydrocarbons, oils, gasoline, steam, air, industrial gases, general chemicals, neutral solutions.

Construction

Style NA1081 is a premium compressed non-asbestos sheet gasket material produced from a combination of DuPont Kevlar®, Inorganic Fillers and bonded with Nitrile Rubber (NBR). It is manufactured under rigorous quality control standards that are registered under ISO-9001 certification.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	
Continuous Service:	500 (260)
Maximum Service:	752 (400)
Availability	59 x 63 in & 59 x 126 in
Color	Blue

Pressure psi (bar)	
Continuous Service:	725 (50)
Maximum Service:	1595 (110)
Thickness	1/64", 1/32", 1/16", 3/32", 1/8"
ASTM F104	F712220E23M5

Typical Physical Properties:	
Density	119.5 lb/ft3 (1.92 g/cm3)
Compressibility - ASTM F36	7-17%
Recovery - ASTM F36	50%
Tensile Strength Across Grain - ASTM F38	1820psi (12.5 N/mm2)
Ignition Loss - ASTM F495	26%
Thickness Increase - ASTM F146 - after 5hr	
Fuel B, @ 77°F (25°C)	15%
ASTM Oil IRM 903 @ 300°F (150°C)	15%

Weight Increase - ASTM F146 - after 5hr	
ASTM Oil IRM903 @ 300°F (150°C)	15%
Creep Relaxation - ASTM F38	22%
Fuel B, @ 77°F (25°C)	15%
Torque Relaxation	37N/mm2
Sealability @ 1000psi - ASTM F37	max .2 ml/hr

NA 1085 Compressed Sheet with Aramid Fiber, CSM

Style NA1085 is a severe service non-asbestos sheet that is specifically formulated to provide an effective seal against most acids in the process industries. This style is suitable for service handling the following general media categories:

- Water
- Brine
- Saturated Steam
- Air
- Industrial gases
- Oxygenated solvents
- Neutral solutions
- Refrigerants
- General chemical
- Diluted alkalis

Construction

Style NA1085 is a compressed non-asbestos sheet gasket material produced from aramid fibers and bonded with CSM rubber. It is manufactured through the hot calendar process under rigorous quality control standards that are registered under ISO-9001 certification.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	
Continuous Service:	392 (200)
Maximum Service:	464 (240)
Availability	59 x 63 in & 59 x 126 in
Color	Cobalt Blue

Pressure psi (bar)	
Continuous Service:	735 (50)
Maximum Service:	1015 (70)
Thickness	1/64", 1/32", 1/16", 3/32", 1/8"
ASTM F104	F712000E00M5

NA1088 Controlled Swell Sheet

Style NA1088 is used in difficult to seal applications where inadequate bolt loading or flange surface conditions are not ideal, in low to moderate flange load conditions.

- Petroleum and Derivatives
- Synthetic oils
- Aliphatic solvents
- Mild organic acids
- Water
- Coolants
- Refrigerants
- Vegetable oils
- Animal oils

Construction

Style NA1088 is a high density, controlled swell sheet gasket material with a proprietary binder & reinforced with a synthetic/inorganic fiber blend. It is designed for demanding applications requiring excellent sealability, torque retention, recovery, and conformability to uneven flange surfaces. The material provides a controlled swell in the presence of oils, fuels, lubricants, and water/coolant. It is used in heavy duty & industrial oil sealing applications such as diesel engine oil pans and front covers, compressors, generators, pumps, valves, gear boxes & housings, transformer, sight glass, man/hand-hole covers.

The following specification values are for 0.8mm (0.031") gauge material.

Service Limits

Temperature °F (°C)	
Continuous Service:	554 (290)
Maximum Service:	1305 (90)

Sheet size	59 x 63 in
Color	Beige/Off White
Thickness	1/64", 1/32", 1/16", 3/32", 1/8"



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Typical Physical Properties:	
Density	104 lb/ft ³ (1.66 g/cm ³)
Compressibility - ASTM F36	10%
Recovery - ASTM F36	50%
Tensile Strength Across Grain - ASTM F38	2175psi (15 N/mm ²)
Ignition Loss - ASTM F495	

Thickness Increase - ASTM F146 - after 5hr	
Fuel B, @ 77°F (25°C)	40%
ASTM Oil IRM 903 @ 300°F (150°C)	85%
ASTM Oil #1 @ 300°F (150°C)	35%
Creep Relaxation - ASTM F38	18%
Torque Relaxation	28N/mm ²
Sealability @ 1000psi - ASTM F37	max 2.0 ml/hr

NA 1100 Compressed Sheet with Carbon Fiber, NBR Binder

Style NA1100 is a premium grade, multi-service gasket sheet, designed to handle the extremes of pressure and temperature, and it cuts very easily and cleanly. The versatility of this sheet enables a plant to standardize on one sheet for a multitude of applications and avoid the confusion of having to choose from several different sheets.

NA1100 is suitable for service handling the following general media categories:

- Mild inorganic acids
- Diluted alkalis
- Saturated steam
- Synthetic oils
- Aliphatic solvents
- Mild organic acids
- Water
- Industrial gases
- Vegetable oils
- Neutral solutions
- Air
- Brine
- Animal oil
- Petroleum and Derivatives
- Refrigerants

Construction

Style NA1100 is a compressed non-asbestos sheet gasket material produced from carbon fibers and graphite, bonded with nitrile rubber (NBR). It is manufactured through the hot calendar process under rigorous quality control standards that are registered under ISO- 9001 certification. NA1100 is also available wire reinforced.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	
Continuous Service:	518 (270)
Maximum Service:	842 (450)
Availability	59 x 63 in & 118 x 126 in
Color	Black

Pressure psi (bar)	
Continuous Service:	1015 (70)
Maximum Service:	1885 (130)
Thickness	1/64", 1/32", 1/16", 3/32", 1/8"
ASTM F104	F712120E23M6

Typical Physical Properties:	
Density	106 lb/ft ³ (1.7 g/cm ³)
Compressibility - ASTM F36	5-15%
Recovery - ASTM F36	50%
Tensile Strength Across Grain - ASTM F38	2175psi (15 N/mm ²)
Ignition Loss - ASTM F495	50%
Thickness Increase - ASTM F146 - after 5hr	
Fuel B, @ 77°F (25°C)	15%
ASTM Oil IRM 903 @ 300°F (150°C)	15%

Weight Increase - ASTM F146 - after 5hr	
ASTM Oil IRM903 @ 300°F (150°C)	15%
Creep Relaxation - ASTM F38	22%
Fuel B, @ 77°F (25°C)	15%
Torque Relaxation	35N/mm ²
Sealability @ 1000psi - ASTM F37	.2 ml/hr

NA1122 High Performance Steam Service Sheet, NBR Binder

NA1122 was developed to exhibit superior thermal stability during extreme thermal cycling applications. It is specifically recommended for saturated and superheated steam services but has also proven itself to be very effective in sealing liquid petroleum derivatives, ethanol, chemical products and other fluids. Field tests have validated the results found in our laboratories and have confirmed the higher performance capabilities of NA1122.

Construction

NA1122 is a compressed non-asbestos sheet gasket material produced from a combination of inorganic fibers and special fillers, bonded with nitrile rubber (NBR). It is manufactured through the hot calendar process under rigorous quality control standards that are registered under ISO-9001 certification. Teadit style NA1122 is also available wire reinforced.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	
Continuous Service:	806 (430)
Maximum Service:	1022 (550)
Availability	59 x 63 in & 118 x 126 in
Color	Black

Pressure psi (bar)	
Continuous Service:	1480 (102)
Maximum Service:	2177 (150)
Thickness	1/64", 1/32", 1/16", 3/32", 1/8"

Typical Physical Properties:	
Density	91.14 lb/ft3 (1.46 g/cm3)
Compressibility - ASTM F36	12-22%
Recovery - ASTM F36	40%
Tensile Strength Across Grain - ASTM F38	1305psi (9 N/mm2)
Thickness Increase - ASTM F146 - after 5hr	
Fuel B, @ 77°F (25°C)	15%
ASTM Oil IRM 903 @ 300°F (150°C)	15%

Weight Increase - ASTM F146 - after 5hr	
ASTM Oil IRM903 @ 300°F (150°C)	30%
Fuel B, @ 77°F (25°C)	20%
Sealability @ 1000psi - ASTM F37	43MPa

High Temperature Gasketing Material

TM 1860 & TM 1863 Extreme Heat Resistant Mica. 1860=TerMica, 1863=TerMica M

Style TerMica and TerMica M material excels in the most extreme heat conditions, and is used in difficult sealing scenarios such as exhaust, hot gas and silencer applications.

Construction

Style TerMica is an extreme heat resistant material. This premium phlogopite mica material is not prone to significant weight loss in elevated temperatures, allowing it to maintain sealing ability in the most challenging applications. Style TerMica M is premium phlogopite mica with a metal reinforced perforated stainless steel core. This provides good recovery properties and load retention, for long-term sealing ability and also improved pressure resistance.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	
Maximum Service:	1832 (1000)
Availability	39.4 x 47 in
Color	Tan with Green Tint

Pressure psi (bar)	
TM 1860 - Maximum:	72 (5)
TM 1863 - Maximum:	391 (27)
Thickness	1/64", 1/8", 0.40", 0.20"

Typical Physical Properties:	XHR Values	XHR-M Values
Density	119 lb/ft ³ (1.9 g/cm ³)	100 lb/ft ³ (1.6 g/cm ³)
Compressibility - ASTM F36	25%	10-40%
Recovery - ASTM F36	10%	10%
Tensile Strength Across Grain - ASTM F38	2900 psi (20 N/mm ²)	5000 psi (35 N/mm ²)
Ignition Loss - ASTM F495	5% max	5% max
Cold Compressibility - ASTM DIN 28090-2		20%
Hot Creep - ASTM DIN 28090-2		10%
Hot Recovery - DIN 28090-2		2%

Rubber Gasketing

Finished rubber, cut gaskets from domestic and non-domestic material/ sources.

Rubber Styles

Ethylene-Propylene (EPDM) Rubber

EPDM rubber has good resistance to ozone, steam, strong acids and alkali. Not recommended for use with solvents and aromatic hydrocarbons.

Fluoroelastomer (FKM)

FKM fluoroelastomer offers excellent resistance to strong acids, oils, gasoline, chlorate solvents and aliphatic and aromatic hydrocarbons. Not recommended for use with amines, esters, ketones and steam.

Hypalon® Rubber

Hypalon®, similar to Neoprene rubber, offers excellent resistance to ozone, sunlight, chemical products and good resistance to oils.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Natural Rubber (NR)

Natural Rubber

Nitrile Rubber (NBR) Black and White

NBR rubber is also known as Buna-N. It offers good resistance to oils, and aliphatic hydrocarbons and gasoline. Little resistance to strong oxidant agents, chlorate hydrocarbons, ketones and esters.

Red Rubber (SBR)

SBR rubber commonly called “synthetic rubber” was developed as an alternative to the natural rubber. Recommended for service in cold and hot water, air, steam and some weak acids. It should not be used with strong acids, oils, grease and chlorates. It offers little resistance to ozone and to the majority of hydrocarbons.

Silicone Rubber (SI)

Silicone rubber offers excellent resistance to the aging process, being unaffected by sunlight or ozone. For that reason it is often used in hot air. It has little mechanical resistance. It does not resist aliphatic and aromatic hydrocarbons or steam.

Flexible Graphite

High Temperature Graphite Sheet with Multiple Foil Inserts

Commonly used in pipe flanges, equipment and pressure vessels; non-typical geometry flanges tongue/groove and heat exchanger flanges. It is also suitable for use in the manufacture of gaskets for sight glass, pumps, fittings and valves, etc.

Construction

SIGRAFLEX APX2 Hochdruck is a multi layer, high-strength gasket sealing sheet designed for high-temperature applications. The sheet is comprised of 0.020” thick layers of highly oxidation resistant SIGRAFLEX APX2 flexible graphite and 0.002” thick inserts of 316L stainless steel foil, manufactured with SIGRAFLEX Hochdruck technology.

Properties

APX2 Hochdruck is specifically designed for high temperature flat gasket applications. It combines the outstanding weight loss characteristics of SIGRAFLEX APX2 flexible graphite and reinforcing layers of metal in SIGRAFLEX Hochdruck technology.

Gaskets made from this type of sheet perform well in critical applications due to high mechanical strength and blow-out resistance, working pressure resistance up to 3600 psi (250 bar), excellent chemical resistance, very low cold or hot relaxation, and a maximum permissible gasket stress. Among its advantages, there is good conformation to sealing surface, excellent torque retention and high sealability. The thermal stability of SIGRAFLEX APX2 is superior to that of standard grades of graphite foil. This is reflected by its mass loss curve, whose temperatures for any given mass loss are about 150°C higher.



223 HOUSE ST. ALVIN, TX
77571

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	
Minimum Service:	-418 (-250)
Maximum Service:	1202 (650)

Pressure psi (bar)	3600 (250)
Availability	59.1 x 59.1 in
Color	Black
Thickness	1/16", 1/8"

Typical Physical Properties:	
Bulk Density - ASTM C559	70 Lb/ft ³
Compressibility - ASTM F36	35%
Recovery - ASTM F36	15%
Creep Relaxation - ASTM F38 - (flexible graphite only)	< 4%
ASTM Oil IRM 903 @ 300°F (150°C)	15%

Ash Content - ASTM C562	≤2%
Carbon Content - ASTM D5373	≥98%
Total sulfur - ASTM D4239B	< 300ppm
Total Chlorides - ASTM 4208/D4327	≤25 ppm
Oxidation rate in air @670°C - 1238°F - LECO TGA	≤1%

Number of Inserts	Number of 316L SS foil Inserts 1/16 thk	2
	Number of 316L SS foil Inserts 1/8 thk	5

Flexible Graphite Tape

Crinkled flexible graphite tape are made from high purity graphite with no fibers, binders or other additives. Crinkled tape is typically used as a stuffing box packing for pumps and valves. Style 2551 is the same as 2550 except that it is furnished with a self-adhesive backing strip to facilitate installation as a form-in-place gasket, thread sealant, or for facing jacketed and other difficult-to-seal gaskets.

Flexible graphite covers a broad range of sealing applications. It handles most chemicals in the 0 - 14 pH range at cryogenic and elevated temperatures, and from vacuum to extreme pressures. It is used extensively in the chemical, automotive and pump and valve industries.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Service Limits

Temperature °F (°C)	
Minimum:	-328(-200)
Pressure psi (bar)	
Static	1987 (137)

Maximum:	
In air	842 (450)
In steam	1202 (650)
In reducing or inert media	5432 (3000)

Homogeneous Flexible Graphite Sheet

Flexible graphite sheet has pressure-temperature sealability capabilities that are far superior to all asbestos reinforced and non-asbestos reinforced sheet products. It is resistant to chemical attack by virtually all organic and inorganic fluids with the exception of concentrated, highly oxidizing acids. Gaskets cut from Style 2660/1660 flexible graphite sheet seal with low to moderate bolt loads and because of very low creep relaxation, re-torquing is rarely required. Flexible graphite conforms to irregular flange sealing surfaces and readily flows into flange irregularities enabling it to seal both smooth and coarse surface finishes.

Construction

Style 2660/1660 flexible graphite sheet is made from exfoliated graphite flake which is compressed into foil by a carefully controlled calendaring process. In this process, the expanded flake particles are mechanically locked together without the use of fibers, binders or other additives. Sheets of graphite foil are then adhesive bonded and laminated to the required thickness.

Service Limits

Temperature °F (°C)	
Continuous Service:	-328 (-200)
Pressure psi (bar)	
	3600 (250)
Availability	
	59.1 x 59.1 in
Thickness	
	1/16", 1/8"

Maximum Service:	
In air:	842 (450)
In steam:	1202 (650)
In reducing or inert media:	5432 (3000)

Typical Physical Properties:	
Density	62.4 lb/ft ³
Compressibility - Tested under 5000 psi	45%
Recovery - Tested under 5000 psi	20%
Carbon Content	98% minimum
Total sulfur	≤750 ppm maximum
Leachable Chlorides	< 30 ppm maximum

Creep Relaxation	5%
Compressive Strength	35,000 psi
Tensile Strength Across Grain	650 psi



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Flexible Graphite Sheet (316SS Foil Insert)

Style 2661/1661 flexible graphite sheet has pressure-temperature sealability capabilities that are far superior to all asbestos reinforced and non-asbestos reinforced sheet products. It is resistant to chemical attack by virtually all organic and inorganic fluids with the exception of concentrated, highly oxidizing acids. Gaskets cut from Style 2661/1661 flexible graphite sheet seal with low to moderate bolt loads and because of very low creep relaxation, re-torquing is rarely required. Flexible graphite conforms to irregular flange sealing surfaces and readily flows into flange irregularities enabling it to seal both smooth and coarse surface finishes.

Construction

Style 2661/1661 is a flexible graphite sheet reinforced with a 316SS foil, .002" thick. The flexible graphite sheet is made from exfoliated graphite flake which is compressed into foil by a carefully controlled calendaring process. In this process, the expanded flake particles are mechanically locked together without the use of fibers, binders or other additives. Sheets of graphite foil are then adhesive bonded and laminated to the required thickness with the 316SS foil core in the center.

Service Limits

Temperature °F (°C)	
Continuous Service:	-328 (-200)
Pressure psi (bar)	
	2030 (140)
Availability	
	39 x 39 in & 60 x 60 in
Thickness	
	1/64"* , 3/32"* , 1/32" , 3/16"* , 1/16" , 1/8" , 1/4"

Maximum Service:	
In air:	842 (450)
In steam:	1202 (650)
In reducing or inert media:	5432 (3000)

Typical Physical Properties:	
Density	62.4 lb/ft ³
Compressibility - Tested under 5000 psi	35%
Recovery - Tested under 5000 psi	18%
Carbon Content	98% minimum

Creep Relaxation	12%
Compressive Strength	35,000 psi
Tensile Strength Across Grain	5000 psi
Total sulfur	≤750 ppm maximum
Leachable Chlorides	< 30 ppm maximum



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Flexible Graphite Sheet (316SS Tanged Core)

Style 2663/1663 flexible graphite sheet has pressure-temperature sealability capabilities that are far superior to all asbestos reinforced and non-asbestos reinforced sheet products. It is resistant to chemical attack by virtually all organic and inorganic fluids with the exception of concentrated, highly oxidizing acids. Gaskets cut from Style 2663/1663 flexible graphite sheet seal with low to moderate bolt loads and because of very low creep relaxation, re-torquing is rarely required. Flexible graphite conforms to irregular flange sealing surfaces and readily flows into flange irregularities enabling it to seal both smooth and coarse surface finishes.

Construction

Style 2663/1663 is a flexible graphite sheet reinforced with a 316SS tanged core, .005" thick. The flexible graphite sheet is made from exfoliated graphite flake which is compressed into foil by a carefully controlled calendaring process. In this process, the expanded flake particles are mechanically locked together without the use of fibers, binders or other additives. Sheets of graphite foil are then adhesive bonded and laminated to the required thickness with the 316SS tanged core in the center.

Service Limits

Temperature °F (°C)	
Continuous Service:	-328 (-200)
Pressure psi (bar)	
	2030 (140)
Availability	
	39 x 39 in & 60 x 60 in
Thickness	
	1/64"* , 3/32"* , 1/32" , 3/16"* , 1/16" , 1/8" , 1/4"

Maximum Service:	
In air:	842 (450)
In steam:	1202 (650)
In reducing or inert media:	5432 (3000)

Typical Physical Properties:	
Density	62.4 lb/ft ³
Compressibility - Tested under 5000 psi	35%
Recovery - Tested under 5000 psi	18%
Carbon Content	98% minimum

Creep Relaxation	10%
Compressive Strength	35,000 psi
Tensile Strength Across Grain	5000 psi
Total sulfur	≤750 ppm maximum
Leachable Chlorides	< 30 ppm maximum



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

NON-METALLIC GASKETS PACKING

Flexible Graphite Sheet - Mylar Film Insert

Style 2664/1664 flexible graphite sheet has pressure-temperature sealability capabilities that are far superior to all asbestos reinforced and non-asbestos reinforced sheet products. It is resistant to chemical attack by virtually all organic and inorganic fluids with the exception of concentrated, highly oxidizing acids. Gaskets cut from Style 2664/1664 flexible graphite sheet seal with low to moderate bolt loads and because of very low creep relaxation, re-torquing is rarely required. Flexible graphite conforms to irregular flange sealing surfaces and readily flows into flange irregularities enabling it to seal both smooth and coarse surface finishes.

Construction

Style 2664/1664 is a flexible graphite sheet reinforced with Mylar film, .0005" thick. The flexible graphite sheet is made from exfoliated graphite flake which is compressed into foil by a carefully controlled calendaring process. In this process, the expanded flake particles are mechanically locked together without the use of fibers, binders or other additives. Sheets of graphite foil are then adhesive bonded and laminated to the required thickness with the Mylar film in the center.

Service Limits

Temperature °F (°C)	
Continuous Service:	-328 (-200)
Pressure psi (bar)	2030 (140)
Availability	39 x 39 in & 60 x 60 in
Thickness	1/64"* , 3/32"* , 1/32" , 3/16"* , 1/16" , 1/8" , 1/4"

Maximum Service:	
In air:	842 (450)
In steam:	1202 (650)
In reducing or inert media:	5432 (3000)

Typical Physical Properties:	
Density	62.4 lb/ft ³
Compressibility - Tested under 5000 psi	40%
Recovery - Tested under 5000 psi	18%
Carbon Content	98% minimum

Creep Relaxation	5%
Compressive Strength	35,000 psi
Tensile Strength Across Grain	650 psi
Total sulfur	≤750 ppm maximum
Leachable Chlorides	< 30 ppm maximum



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

H&H SEAL AND PRODUCTS

Gaskets and Packings

RING JOINTS



223 HOUSE ST.
ALVIN, TX 77511

(832) 802-3083
HHSEALPRODUCTS.COM

Gaskets and Packings

RING JOINTS

Ring Joints

Metallic Ring-Joints are produced according to the standard established by the American Petroleum Institute, API 6A and API 17D and the American Society of Mechanical Engineers, ASME B16.20, for application at elevated temperatures and/or pressures. A typical application of Ring-Joints is the “Christmas Tree” used in oil fields. The seal is obtained in a line of contact by a wedge action with high seating pressures thus, forcing the gasket material to flow. The small sealing area with high contact pressure results in great reliability. However the contact surfaces of the gasket and the flange should be carefully finished. Some styles of Ring-Joints are pressure activated, that is, the greater the pressure the better the sealability.

RJ Materials

Table below shows the standard materials recommended by the ASME B16.20 for Ring Joint Gaskets.

WINDING

Material	O.D. Ring Color
304 Stainless Steel	Yellow
316L Stainless Steel	Green
317L Stainless Steel	Maroon
321 Stainless Steel	Turquoise
347 Stainless Steel	Blue
Monel®	Orange
Nickel	Red

Material	O.D. Ring Color
Titanium	Purple
Alloy 20	Black
Inconel®600	Gold
HASTELLOY® B	Brown
HASTELLOY® C	Beige
INCOLOY® 800	White

Note:

a) The code of each material is engraved on the gasket next to its size, according to Standard ASME B16.20.
STYLES

Style 950

Style 950, which is frequently referred to as the oval ring, was the gasket that was initially standardized. Later developments resulted in other styles. If the flange was designed using the older version of the gasket standard, for use with an oval ring, then it should be used only with style 950 gaskets.

Style 951

Style 951 has an octagonal section as shown in the Figure on the right. Style 951 has better sealing performance than Style 950 and its use is recommended for new applications. For this style flanges are manufactured according to new issues of ASME and API standards and have grooves with a profile designed to work with both 950 and 951.



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com

Gaskets and Packings

RING JOINTS

Style 952 BX

Style BX gasket has a square cross section with bevelled corners as shown in the Figure on the right. Designed for use only in flanges API 6BX. Style BX is recommended for pressures from 5000psi (34.5MPa) up to 20000 psi (138MPa). The average diameter of the gasket is slightly greater than that of the flange groove. This way when the gasket is seated it stays pre-compressed by the outside diameter creating a high seating stress.

Style 953 RX

Style RX is pressure-activated gasket. Its shape is designed to use the fluid pressure to increase the sealability. The outside sealing surface of the gasket makes the initial contact with the flange seating the gasket. As the internal pressure of the piping or equipment is increased, the contact pressure between gasket and flange also increases due to the shape of the gasket. High seating pressure are created increasing the sealability. This design characteristic makes this gasket style nire resistant to vibrations, pressure surges and shocks that occur during oil well drilling. Style RX is interchangeable with style 950 and 951, using the same flange grooving.

Hardness

The maximum hardness for each gasket material is shown in Table 1. It is recommended that the hardness of the gasket always be less than that of the flange so as not to damage it. When the materials of the flange and the gasket are similar, it is recommended to heat-treat the gasket to have the minimum possible hardness. Dimentions, Tolerances and ASME Code Gasket Factor

For ASME Code calculation values for Ring Joint gaskets are shown in the Table below.

ASME Gasket Factors

Gasket Metal	"m"	"y"(psi)
Carbon Steel	5.50	18000
Stainless Steel	6.50	26000
Monel	6.00	21800



223 HOUSE ST. ALVIN, TX
77511

(832) 802-3083
steve@hhsealproducts.com
www.hhsealproducts.com