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Natraj Rubber
Rubber Insertion Sheet



Boron Rubbers India
Moulded Rubber Sheet



PP & HDPE Pipe,
Pipe Fittings & Sheet

THANAWALA & CO.

Cotton and synthetic ropes,
cordages, tapes, webbing etc.

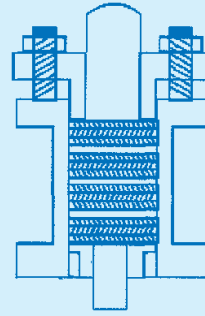


Thermal Papers Pvt. Ltd.
Asbestos Mill Board



Brake Liners &
Gland Packings

Authorised Stockists



SPITMAAN

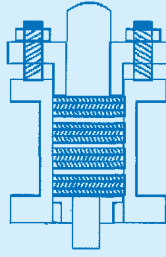
Asbestos & Non Asbestos
fiber jointing sheet
&
Gland Packings

dt

Deeva Traders

(Since 1966)

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SPITMAAN

Asbestos & Non Asbestos

YARN

CLOTH

TAPES, WEBBINGS

LISTING (ELECTRICAL)

LAGGING ROPE

MECHANICAL FLUID SEALANTS

METALLIC AND NON-METALLIC

DRY AND GRAPHITED

PACKING AND SEALS

COMPRESSED ASBESTOS FIBRE

JOINTING SHEETS AND GASKETS

ASBESTOS AND P.T.F.E.

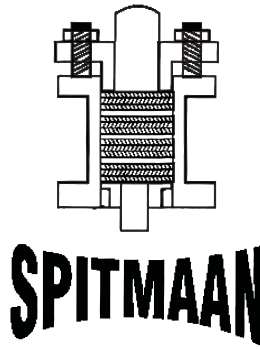
PRODUCTS

ALL ENGINEERING PLASTIC PRODUCTS,

RUBBER SHEETS & PRODUCTS

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SPITMAAN GLAND PACKING

FUNCTION OF A PACKING : is to form a seal against leakage of process fluid and are packed around a moving shaft or rod.

USE QUALITY PACKING : packing cost far less than the labour and loss in production spent by repacking.
CHOOSE THE RIGHT STYLE OF PACKING Improper selection will result in poorer service like. For problem ceases the manufacturers services are available for consultations.

CONSIDERATIONS IN THE CHOICE OF PACKINGS.

The choice of style is influenced by.

- (a) FLUID TEMPERATURE on the stuffing box.
- (b) PRESSURE on the stuffing box.
- (c) FLUID MEDIA to be sealed.
- (d) Degree of acidity or alkalinity of the fluid (PH value).

The temperature and pressure have to be considered in relation to PHYSICAL AND CHEMICAL reactions on the packing and constituents including lubricants. For abrasive and highly viscous fluid service conditions lubricated gland packings with metallic wire reinforcements are recommended. In the use of such packings the temperature limitations are based on the type of wire used.

For stringent service conditions of high temperatures, acid, alkalies, hot oils, gases and highly corrosive chemicals SPITMAAN packing of special constructions are available for a wide range of applications.

SHAFT

It is ultimately more economical to maintain in perfect order high quality equipments in shaft, Bearings, Sleeves and guides. Neglect results in poorer sealing and short packing like. It is recommended to recondition or replace a badly worn shaft to ensure efficiency.

When work has to go on with scored rod or shaft a resilient packing or partly vulcanized cushion-effect packing is best suited. Vulcanised packings on worn out shaft are least suited.

- (a) Graphited packing must not be used on STAINLESS STEEL SHAFT to avoid galvanic action.
- (b) The metal a shaft is made of, has to be considered in the selection of packing.

TYPE OF MOTION OF SHAFT ROTARY AND RECIPROCATING.

Lubricated SPITMAAN PACKING are best suited on shaft rotary or reciprocating where rubbing speed are high for receiprocating rods proofed rubber packing are recommended for efficient service. For rotary Shafts, Rubberised packing may be used if speeds are low.

LUBRICATION OF PACKING.

The packing acts like a bearing and must be lubricated in one form or another when in use. The most common cause of packing failures is lack of lubrication. A dry packing runs hot, hardens and scores the shaft and fails just as in the case of bearings not lubricated.

In the use of DRY PACKINGS on moving rods, lubrication comes from :

- (a) Service fluid itself which acts as a lubricant.
- (b) By permitting a slight leakage of the process fluid, or
- (c) External means of introducing lubricants are provided.

EFFICIENCY IN PACKING SERVICE.

Efficient performance of packing requires proper selection of style of packing, smooth conditions of shaft, sleeves, bearings, stuffing box, gland and adequate lubrication of the packing.

EFFICIENT INSTALLATION.

- (a) Thoroughly clean the stuffing box and gland bush.
- (b) Check clearance of gland bush both in stuffing box and the rod or shaft.
- (c) Use correct size of packing.
- (d) Cut packing into correct lengths to make rings of right diameter.
- (e) Cut soft gland packing in square BUTT JOINTS allowing space for expansion to prevent jamming of packing in service. Place joints of successive rings at 90° apart. While cutting soft gland packing having tendency to fray, some to tape the point where the cut is to be made.
- (f) To pack valves bevel cut (45° skive cut) is recommended.
- (g) The ends of metallic packing are advised to be cut at 45° making a diagonal joint-no gap needed.
- (h) The ends of channel backed, moulded packing of firm strettres should be cut square butt ends and a gap be left between the ends for expansion according to the length of rings, size of packing nature of material and service conditions prevailing.
- (i) It is advised that the clearance of neck or lantern ring not to exceed 0.4 mm.
- (j) When requisite number of rings have been inserted screw down with spanner so that the packing is "PROPERLY BEDDED". Slacken off gland nuts to allow packing to expand to its normal volume. Gland nuts should be adjusted FINGER TIGHT. Overtightening will damage packings.
- (k) When pressures encountered are more than average it becomes necessary to use combination assemblies incorporating header and spacer rings which have greater resistance to deformation than softer pliable packing.
- (l) Where fluids of low viscosity are likely to creep past metallic packing rings, a combination assembly with softer and more pliable packing as intermediate ring is advised.

Bad handling or improper installation will result into erratic packing performance. Except for corrosives 70% of wear normally is in the front two rings nearest the gland. Proper seating and installations tends to wear packing evenly.

Packing must leak to perform efficiently. Stopping leakage entirely burns up the packing. Initial leakage should be permitted more freely with gradual tightening of nuts.

EXCESSIVE LEAKAGE INDICATES.

- (a) Incorrect packing choice.
- (b) bad fitting.
- (c) mechanical fault.

Dust or dirt in valves, on packing, on glands or stuffing box cause packing failures. Always repack with fresh packing set. In case of there being excess clearance in the bottom, it should be corrected by a throat bush, packing must not extrude at this place.

Where performance is unsatisfactory despite correct packing having been used examination of used packing will show cause of failure.

SOME CLUES AND CHECKS ON PACKING FAILURES.

TROUBLE INDICATION

Early leakage occurs around the top of shaft or rod. Excessive reduction in the cross section of packing directly beneath the rod or shaft.

No leakage at start.

Excessive reduction in thickness of packing on inner sides of rod or shaft.

Excessive reduction in thickness of packing excessive on inner side of rod of shaft.

Wear on outside dia. of packing.

Distinct bluge on side of ring.

Sides of rings' shining and worn out.

SUGGESTED CHECKS

Check the rod and bearing rod riding on packing probably packing supporting rod.

Back off gland to adjust for adequate leakage.

Check for correct size of packing Check for correct installation principles.

At high pressure a porous cast iron ram will cause wear.

Rod out of alignment of bearings badly worn out whipping of shaft.

Incorrect fit, rings rotating with shaft or loost in box, walls of stuffing box worn out or pitted.

Indicates extrusion of packing into the opening. Rings cut incorrectly probably too short with gap between rings, incorrectly spaced being too wide.

Rings too loose and rotating with shaft.

Rings missing from set.

Packing entering the system. Check and install bottom of stuffing box badly worn.

Ring extrudes past gland follower badly deformed with bottom rings in fair condition.

Excessive gland pressure or excess clearance between shaft dia. and ID of follower or improper installation. Apply bushing.

Packing is torn.

Burrs on sleeve or some abrasive cutting the packing. Corrective measures according to factors involved.

Rings or packing charred, dried or burnt.

Check Size and style of packing with relation to heat and peripheral speed limitations, check lubrication. Check for abrasives if any.

Loss of lubrication in excessive measure.

Excess pressure on gland nuts, or incorrect choice of packing or whip in shaft.

Packing seizes on shaft after shut down.

Fluid forming salt and congealing in packing. Lubricate packing before shut down.

Unexplained leakage.

Shaft sleeve check on sleeve seal.



Mfg. by : MECHANICAL PACKING INDUSTRIES PVT. LTD.

INTRODUCTION :

Advanced developments in all areas of industry demands high-tech Packings. Through continuous research and experience of more than 35 years with most modern technique and materials, we are able to master all the fields of application while giving highest functional reliability.

Stuffing Box packing are renowned quality products and embraces the entire spectrum from consultancy to problem solving to suit your particular application

STEAM, SUPER HEATED STEAM		
Style No. "SPITMAAN"	Temperature (Centigrade)	Service Recommendation
1000	350°	Asbestos dry plaited general steam and insulation packing for hot gases, oven, autoclaves etc. conforming to IS Specn. 4687 / 1968 / 1980 and DGS & D Specifications.
1100	325°	Lubricated and graphited, general-purose asbestos packing for Glands for medium pressure conditions conforming to IS Specn. 4687 / 1968 / 1980 and DGS & D Specifications.
1200	350°	Incorporated with white metal wire for low friction and greater mechanical durability, Suitable for rotary shafts with peripheral speeds upto 1750 ft/min. Recommended for steam, hot water, wead acids and alkalies.
1300	500°	Brass wire reinforced asbestos yarn packing. Specially suited to high speed rotary and reciprocating shafts even at higher temperature and pressure. Incorporation of brass wire improves its strength and anti-friction properties. It is recommended for saturated and super heated steam, hot water, air, gases, oils, steam expansion glands, rotary and reciprocating equipments.
1800	490°	Non-metalic asbestos lubricated and graphited packing for high pressure saturated super heated steam conforming to IS Specn. 4687 / 1968 and DGS & D Specifications.
1850	490°	Same as above, but lubricated non graphited varsion meant for STAINLESS STEEL RODS.
1900	540°	Crysotile white dry asbestos fibre yarn of high purity braided packing non-metalic used where servere high temperature conditions prevail. Best suited for expansion joints, door ovens, caulking of joints, exhaust pipe wrappings, ductings etc.
1910	540°	A closely braided high content asbestos yarn packing non-metalic lubricated with special hear resisting dry lubricant. Specially recommended for high pressure superheated steam services. An excellent soft packing for valve glands, guage glass fittings, turbines, boilers and similar applications. Please state when spindle / rod is STAINLESS STEEL
1916	815°	Braided from high grade asbestos yarn suitably lubricated and reinforced with stainless steel wire. This is an ideal choice for high temperature valve application and is suitable for service with steam, butane and propane gases, oil vapour, furnace oil etc. Please state when spindle / rod is STAINLESS STEEL
1933	500°	A popular packing made from asbestos fibre yarn reinforced with coper wire and suitable lubricants to withstand high pressure and temperature for steam valve. Please state when rod / spindle is STAINLESS STEEL
1960	680°	A specially developed braided packing for super sealing jobs made from high grade asbestos fibre yarn reinforced with inconel wire and suitably lubricated. It will function most effectuvekt against super sealing jobs on valve stems in power plants and oil refineries. A well recommended packing for control valves at high pressures and temperatures and various other applications. Please specify when rod / spindle is STAINLESS STEEL

Style No. "SPITMAAN"	Temperature (Centigrade)	Service Recommendation
1500 SOLVA	425°	<p>OIL & SOLVENTS, ACID, ALKALES AND CHEMICALS</p> <p>Asbestos Packing manufactured from high grade asbestos yarn impregnated with oil resisting systhetic compound by a controlled process during which each strand is treated with fine graphite and a special grade of lubricant suited for hot and cold oil, slovents, aromatic hydrocarbons, petroleum distillates and oil refinery services. Please specify when the rod or shaft is STAINLESS STEEL.</p>
1513	500°	<p>Asbestos-reinforced brass wire packing treated with oil resisting synthetic comound having suitable lubricant. Incorporation of brass wire improves strength and anti-friction properties. Best suited for petrochemical applications under high pressure conditions. Please indicate specifically when the rod is STAINLESS STEEL.</p>
1490	300°	<p>Special grade of asbestos DUPLEX BRAIDED packing suitably lubricated and treated with graphite to withstand caustic liquors, including caustic potas, soda, lime, ammonia and sulphides. An ideal packing for paper mill applications. PH 4 - 12.</p>
1094	-150° + 300°	<p>High grade asbestos fibre yarn DUPLEX BRAIDED packing impreganted with special PTFE suspensoid for severe caustic and other corrosive chemical, solvents, oils and petroleum byproducts and oxygen service. PH 2 - 12.</p>
1063	-150° to 300°	<p>A combination packing with specially selected fluropolymet PTFE fibre and chemical resistant inorganic fibre yarn for resisting against corrosive medium and concentrated acids. This construction improves the strength and chemical intertness of the packing. This combination packing is further treated with PTFE suspensoid. This packing can be used against acids, chlorine, in valves, pumps having chrome plated or stainless steel shafts. PH 2 - 14.</p>
1003	-150°+300°	<p>A combination packing concetrically braided with special compound to resist hot concentrated alkalies, organic and dilute acids.</p> <p>A very special low friction packing recommended to be used with high speed pumps, agitator shafts, oils, solvents, ammonia solution, concentrated caustics and ketones. PH 2 - 12.</p>
1	-200° to +290°	<p>A super fluorocarbon fibre interbraided packing. This packing is developed for pumps, valves, mixers, agitators involving applications for highly corrosive chemicals, oxygen service, acids and alkalies. PH 0 - 14.</p>
2	-200° to to 290°	<p>A 100% pure PTFE packing impregnated with a special chemically inert suspensoid. A good packing for control valves, pumps handling corrosive gases, ammonia, foodsuffs and pharmaceuticals. It is an ideal packing for sealing dryers, mixers and agitators. Due to high tensile strength of the fibre, this packing is best suited to be used in high pressure valves and reciprocating pump application. PH 0 - 14.</p>
3	-200° to+ 290°	<p>A PTFE fibrous packing having special DUPLEX BRAID to increase dimensional stability treated with inert high temperature lubricant. This packing is safe, non-toxic and flexible for use on pumps, for concetrated acids, alkalies, oils, solvents and gases. PH 0-14.</p>
23	-250° to +300°	<p>A DUPLEX plaited flexible combination packing having super grade fluoropolymer intimately treated with graphite to enhance lubricity and heat dissipation. Thi packing is self lubricating mechanically strong and widely used in chemicals, petrochemicals, power plants, paper, pulp and food industries. PH 0 - 14.</p>
36	-240° to +300°	<p>A graphite bonded fluoropolymer fibre packing DUPLEX BRAIDED to improve thermal conductivity and lubricity for maintaining extremely low friction, chemical resistance and reduces maintenance cost. Best suited to valve stems, centrifugal pumps, woodpulp Caustics, oils, solvents, acids and strong chemicals. This packing is widely used in Refineries, Petrochemicals and Fertilizer Industries. PH 0 - 14.</p>

Style No. "SPITMAAN"	Temperature (Centigrade)	Service Recommendation
38	-200° to+ 600°	An interbraid carbon filament high temperature resistant packing with low friction characteristics for sealing against boiler feed pumps, high temperature high pressure valves, condensates, dryers, against non-oxidising mineral acids, fuel oils, thermic fluidis, petroleum products, steam and water. This packing has excellent therml dissipation and self lubricating prpperties. PH 1 - 14.
40	-200° to+ 950°	Same as above, but reinforced with inconel wire. The heat resistance and conductivity property enables it to be used under arduous conditions. The corrosion resistant wire reinforcement provides the packing to withstand high pressures. An ideal packing for super heated high pressure control valves especially when die formed, apart from other common industrial applications. PH 1 - 12.
66	650°	A 100% pure graphite fibre packing treated with special high temperature lubricant to prevent seepage through the packing. This packing is self lubricating. It eliminates shaft wear because of graphite fibre which has low co-efficient of expasion, high heat conductivity and high temperature resistance. A premium service packing to withstand against acids, alkalis, oils, solvents, steam, fuel, oil, hot tar pumps and hydrocarbons, It is universally being used by maintenance technicians to seal the most demanding applications in valves and pumps. Ph 0 - 14.
166	-200° to+ 300°	A combination of synthetic graphite fibre with specially treated PTFE fibre. This packing is widely used in chemical and petrochemical installations for oils, degreasing fluids, concentrated acids, corrosive gases, for resistance at high speeds. PH 0 - 14.
174	-200° to+ 300°	A most advanced technology packing. A special DUPLEX BRAIDED construction made from synthetic aramid fibre as strong as steel and most flexible, Safely recommended for pumping granular and viscous fluids, even under high pressure condition. This packing is suitable for solvents, abrasive slurries, fuel oil, high pressure dozing pumps, mild acids and alkalies. A most effective packing for refinery, high presure water injection system and as an anti-extrusion packing. PH 3 - 12.
172	-200° to+ 280°	This is a cross braided combination packing having pure PTFE fibre with special high pressure resistant fibre filament yarn incorporated in it. This packing is most suitable to all fluids and corrosive chemicals. It has exceptionally good dimensional stability, creep resistance and is non-toxic. Recommended for dairies, food and pharmaceutical industries, refineries and fertilizer plants. This packing can withstand high pressure conditons in both rotary and reciprocating applications. PH 2 - 12.
176	-200° to+ 300°	A high quality combination packing incorporated with graphite / PTFE fibres and special synthetic fibre to give additional reinforcement of sliding surface and heat dissipation property. It is most suited in centrifugal and reciprocating pumps with high pressure and sliding velocity for abrasive media. It resists hot water, oil gases, greases, liquid amonia and carbamate solution under high pressure conditions. PH 3 - 12.
MARINE AND HYDRAULIC WATER, OIL		
2222	130°	This is specially developed lubricated non-graphited long vegetable fibre braided packing for marine applications. It has been further lJbricated with a low friction dry lubricant to enhance antiriction property for use in sea .water and fresh or river water applications, water wheel shafts or rudder and stern glands.
2224	150°	The most critical parts to seal in a ship are the stern tubes and the rudder post. With this view in mind, a most reliable packing is specially developed from non-asbestos tough vegetable fibres. The packing is impregnated with lubricants which protect the packing structre. This packing is therefore most suited for use in marine against sea water in rudder posts and stern tubes, oils, weak alkali solutions and in paper plants.

Style No. "SPITMAAN"	Temperature (Centigrade)	Service Recommendation
2300	130°	This packing is manufactured from high tensile strength vegetable fibre thoroughly impregnated with a special lubricant and graphite. Suitable for fresh and salt water, penstock and heavy duty hydraulic applications.
376	130°	A special non-graphited soft natural fibre yarn packing impregnated with first grade lubricant suitable for high speed centrifugal pumps, compressors and refrigerations, D M Water, cooling water and condensate pumps. Owing to the pliable nature of the material used this packing permits free motion of the rod.
374	150°	DUPLEX BRAIDED fine soft vegetable fibre packing self lubricated. Each strand of this packing is specially impregnated with additives alongwith brea-in lubricatnt having the property of self lubrication adn media repelling action. This packing is best suited to seal glands of pumps, valves, handling condensates, demineralised water and for cold and hot hydraulic applications.
3116	130°	A fine natural fibre braided packin impregnated with lubricants and graphite recommended for use onreciprocating and rotary pumps, valve spindles, refrigeration machinery and compressors. The packing presents a smooth surface that will not score shaft or sleeves because the soft fibre constantly absorbs the liquid being pumped and maintains a soft and pliable running face on the shaft.
600 'A' Steam	280°	An asbestos proofed semi-metallic packing with strips of white metal intermittent layers embedded. Used on steam expansion glands, marine engines, compressors, pumps, winches and hoists. A special high pressure medium temperature packing for ships and ship building industry, sugar mills, etc.
143 Metaflex A	560°	Aluminium foil, crimped under mechanical precess with high grade lubricants, sealed inlayers and folds build around asbestos or non-asbestos rovings The packing lacks resilience but permits compressibility. Used for high peripheral speeds on rotary crude oil pumps, petroleum distillates, steam compressors, turbines, hot oil valves, brine, hydrocarbons etc. Shafts should be of 500 brinell hardness or over.
146 Metaflex L	300°	A soft white metal foil anti-frictional packing similar in construction as above for high peripheral speed. The packing is soft enough to present the shaft with a bearing alloy that reduces scoring. Recommended for fuel and crude oil, fresh or salt water refrigerator pumps, air compressors, abrasives, crystallizing or congealing liquids such as sugar, asphalt and medium temperature slurries. It is also used as anti extrusion rings in combinationwith regular braided soft packings.
789 C Ammonia	130°	A soft flexible laminated proofed fabric packing impregnated with lubricants which reduce frictionand shaft wear to a minimum. Used extensivelyin ammonia and refrigerating pumps, compressors and water service.
777 Auto Lip	130°	A fine fabric composition precision packing with a lip section for automatic self sealing service on accumulators, press rams, cranes and reciprocating rods under heavy duty hydraulic application.
778 Auto Lip Metalic	130°	A packing similar in construction as above but with white metal pegs embedded on rod surface incresing bearing property. Not suited for non-ferrous soft metal rods.
714 Oelit	130°	A proofed fabric paking with synthetic compounds to resist service conditions of oils, petroleum distillates, solvents and hydrocarbons.

Style No. "SPITMAAN"	Temperature (Centigrade)	Service Recommendation
162	450°C	<p style="text-align: center;">GLASS FIBRE</p> <p>Inter-braided packing of Non-asbestos manufactured from a special high tensile glass yarn every strand of which of lubricated with mineral oil graphite</p>
164	300°C	<p style="text-align: center;">GLASS FIBRE</p> <p>DUPLEX Braided from selected grade of continuous textured glass yarn impregnated with chemically inert PTEE suspensoid and break-in-lubricant.</p>
160	600°C	<p style="text-align: center;">GLASS FIBRE</p> <p>Dry Packing braided from special glass fibre having excellent thermal insulation property. Packing is flexible dimensionally stable having high tensile strength. Unaffected by chemicals or solvents for Industrial and marine application.</p>
161	650°C	<p style="text-align: center;">GLASS FIBRE</p> <p>It is a non-asbestos synthetic fibre plaited packing designed to handle high pressures and temperatures. It remains flexible, compressible even at high temperature and pressure conditions. This packing is developed from special grade of Glass fibre with an inconel wire insert, impreganted with graphite. This packing is designed to retard pitting of chrome steel stems due to electrolytic action. This packing is dimensionally stable having high tensile strength.</p>
170	Upto 280°C	<p style="text-align: center;">PARAMID</p> <p>This packing presents a new concept where soft packings are required for rotary pumps & valves. The packing is made from special grade of aramid fibres. The fibre does not suffer form thermal expansion. This packing is impregnated with inert polymers and high temperature resisting lubricants has a low co-efficient of friction and considerably disperse the heat generated by the peripheral speed.</p>
127	Upto 280°C	<p style="text-align: center;">NOVLON</p> <p>A new generation thermoset environment friendly DUPLEX BRAIDED packing. It does not cause servere shaft scoring like many other synthetic fibre packings. This is a non-contaminating, non-hazardous packing. Due to low co-effecient of friction heat generated is less, resulting in very less resulting in very less wear on shafts/sleeves. The packing is immunized with inert and break-in sacrificial lubricants prolongs packing lefe. It lacks the stiffness of conventional synthetic packing and retains to a great extend its tensile strength in running temperature. The packing is free from electrolytic pitting, elongation and extrusion problems. The packing is very kind to shaft / sleeves and will not leach colours. It is mouldable and conforms to stuffing box configurations a breakthrough in the selection of packings for most difficult applications including abrasive conditions.</p>
78	-250°C TO + 800°C (Steam)	<p style="text-align: center;">FLEXOGRAPH</p> <p>SPITMAAN INTRODUCES A new non-asbestos non-metalic verstile braided packing mand from 'Expanded pure Flexible Graphite Material'. This packing is specially developed to meet with various sealing problems. It is an ideal sealing material to solve the problems of corrosion having excellent thermal conductivity, it has good impermeability form gases & liquids. Best suited for valves handling high pressure super heated steam application, pumps, compressors, most organic and inorganic acids except a few strong oxidizing mediums such as acqua regia, nitric acid, oleum and some halogen in special concetration. It is recommended for use against acids, alkali, salt solution, organic solvents, oil, hydrocarbons. This expanded graphite packing is one of the most flexible, resilient, soft, light in weight and it has plasticity and settles in gland to form an efficient seal. It hs high sealing efficiency at high and low temperature.</p>

Style No. "SPITMAAN"	Temperature (Centigrade)	Service Recommendation
25	~200°C to + 300f1C	<p style="text-align: center;">INSITLON</p> <p>The ingredients are formulated and blended to provide a pcking with superior anti-friction and non-scoring characteristics. The packing though not braided yet stable, strong, mouldable, smooth, flexible and malleable. All the ingredients of the packing is a lubricant. The packing is incorporated with heat transfer properties.</p>
168	1200°C	<p style="text-align: center;">CERAMIC</p> <p>This packing is manufactured from an unique grade of ceramic fibre undergoes a special process to obtain high purity composition required for superior thermal insulation properties. The packing is reinforced with inconel wire lubricated with graphite which increases mechanical strength and resistance to compression and heat dissipation.</p>
165	1250°C	<p style="text-align: center;">CERAMIC</p> <p>A Non-Asbestos Braided Packing manufactured from special grade of Alumina Silica Ceramic Fibre having superior insulating property suitable for a wide variety of industrial applications. This packing has excellent resistance to thermal shock flame, corrosion, greater compression resistance. The packing is having very good resiliency even at high temperature, chemically stable, low thermal conductivity are just some of the properties of this material.</p>
169	-30to160°C	<p style="text-align: center;">RAMIEFLEX</p> <p>Present day gland packing manufacturing activities are concentrated on synthetic yarn sealing material. There are other natural fibres still play a versatile role with their unique properties. Prominent among them is Ramie and extremely strong top quality fibre of plant kingdom. To manufacture glad packings these fibres are uniquely impregnated with PATE dispersion by a proprietary process and futher treated with inert lubricant.</p>
134	230°C	<p style="text-align: center;">ACRYLON</p> <p>A Special Duplex Braided Synthetic Fibre Packing to replace asbestos packings in a variety of applications. The packing is impregnated with chemically inert lubricants by a special process and is having good anti-friction properties.</p>
135	200°C	<p style="text-align: center;">ACRYLON</p> <p>The packing is also supplied impregnated throughout with special lubricant and graphite. Excellent packing for use in low and medium pressure pumps and valves.</p>

Asbestos Yarn

SPITMAAN ASBESTOS YARN is manufactured in an extensively wide range. Some of the Standard Commercial items of frequent usage are listed below.

STYLE 1056

This is the most Standard Quality of Asbestos Yarn and meets with the requirements of the Government of India, Navy, Defence and D. G. S. & D. Specification G/Misc/81-C. and IS specification.

SERVICE :

For heat insulation of small pipes, electric cables sealing joints in flexible metallic tubings, packing in patent glazing, steam valves and water cocks

SIZES:

Twisted to requisite diameters ranging from 1.5 mm to 6 mm.

STYLE 172 GAS MANTLE YARN FOR INCANDESCENT LAMPS

Polished fine Asbestos Yarn is produced duty reinforced to impart strength for use in the manufacture of Incandescent Mantles.

STANDARD SPOOLS : 0.5 Kg.

Asbestos Cloth

SPITMAAN Asbestos Cloth is manufactured in a wide range and it has varied uses. These Cloths range from open weave to close textures in plain, twill, herringbone constructions depending on requirements and end usage.

They are used on Boilers, Pipe Lines, in Power Station, on Ships for Thermal insulation, making Boiler Mattresses, for Protective Clothing and Fire Protection as Gloves, Suits, Blankets, Aprons, Safety Curtains etc. For Electrolysis : For the Diaphragm of Electrolytic cells. Filter Cloth, Conveyor Rollers, for Proofed Sheeting and countless other purposes.

The Asbestos Cloth is manufactured to suit the requirements of different industries in different grades with or without wire insertion.

Following are the Standard and Popular Styles of our products.

Style No.	Approx. width	Approx. Thickeress	Approx. Weight sq./mtr.	Approx. Weight Roll
150*	1 Metre	1.5 mm	1.15kg.	45/50 kg.
155	1 Metre	2.0 mm	1.22 kg.	52/56 kg.
132	1 Metre	3.0 mm	2.44 kg.	56/60 kg.
153	1 Metre	0.8 mm	0.85 kg.	34/37 kg.
182 @ ‡	1 Metre	1.5 mm	1.40 kg.	54/58 kg.
186 ‡	1 Metre	3.0 mm	2.80kg.	65/65 kg.
1331 Metallic	1 Metre	2.0 mm	1.22 kg.	52/56 kg.

* Complies with D. G. S. & D Specification G/Misc/81-C/ Commercial Quality

@ Complies with D. G. S. & D Specification G/Misc/81-C/Special Quality.

‡ Complies with IN Schedule F-6 (A) of the Indian Navy.

SPECIAL QUALITY ASBESTOS CLOTH for special purpose is developed to meet with the requirements of differents industries in requisite widhts. Further details on application.

Asbestos Fibre Filled Rope Lagging

STYLE NO. 12

Is a low density Asbestos Fibre Filled Rope enclosed in wide mesh braided cover.

SERVICE :

Used extensively for the insulation of Steam Pipe Lines in Marine, Hot Water Pipes, Exhausts, Industries and Power Plants.

For temperatures upto about 300°C in majority of general industrial application our Style No. 12 gives efficient service.

BLUE ASBESTOS LAGGING ROPE

STYLE NO. 16

Works efficiently in temperatures upto 400°C. Where active acide fumes are likely this lagging rope is recommended.

For higher temperatures please consult manufacturers. Nominal dia. 12 mm to 51 mm. In Standard coils of 30 metres approx.

THE SATISFACTION OBTAINED FROM COVERING OF ASBESTOS LAGGING ROPE IS MAINLY DEPENDED UPON THE SKILL OF THE USER APPLYING THE ROPE ON PIPES. HOWEVER, THE FOLLOWING TABLE WILL BE USEFUL IN DETRERMINING APPROX. LENGTH OF ROPE THAT MAY BE REQUIRED FOR LAGGING THE PIPE OF DIFFERENT DIA.

Approximate length of rope required per metre of pipe of the dia given below.

O.D. of pipe mm	Size of Rope in mm							
	12.5	16	19	22	25	32	38	50
	mtrs.	mtrs.	mtrs.	mtrs.	mtrs.	mtrs.	mtrs.	mtrs.
21	9.5	9.0	8.0	7.5	7.0	6.5	6.0	6.0
27	11.0	9.5	9.0	8.0	8.0	7.0	6.5	6.0
33	12.5	11.0	10.0	9.0	9.0	8.0	7.0	6.5
41	14.5	12.5	11.0	10.0	9.5	8.5	8.0	7.0
48	16.0	13.5	12.0	11.0	10.5	9.0	8.5	7.5
60	19.0	16.0	14.0	12.0	12.0	10.5	9.5	8.0
76	23.0	19.5	17.0	15.0	14.0	12.0	10.5	9.0
89	26.5	22.0	19.0	17.0	15.5	13.5	11.5	10.0
102	29.5	24.5	21.0	18.5	17.0	14.5	12.5	11.0
114	32.5	27.0	23.0	20.0	18.5	16.0	14.0	11.5
127	36.0	29.0	25.0	22.0	20.0	17.0	15.0	12.0
140	39.0	32.0	27.0	24.0	21.5	18.0	16.0	13.0
165	45.0	36.5	31.5	27.5	25.0	21.0	18.0	14.5
190	51.0	41.5	35.5	31.0	28.5	23.5	20.0	16.5
216	57.0	47.0	40.0	34.5	31.0	26.0	22.0	18.0
241	64.0	51.5	44.0	38.0	34.0	28.5	24.0	19.5
273	72.0	58.0	49.5	42.5	38.0	31.5	27.0	21.5
324	85.0	68.0	57.5	49.5	44.0	36.5	31.0	24.5
375	97.0	77.5	66.0	57.0	51.0	41.5	35.0	27.5

BELKA PACKINGS : Belka is a braided form of packing manufactured in size 3, 4 and 5mm square or round section in all different styles of packings according to service conditions with certain exceptions.

PACKING SETS & RINGS : Accurately pre-formed rings specially designed and custom built whether open or split are preferable on the basis of overall economy, simple and rapid installation, no cuffing to size, good seal performance and long life.

GRAFSEAL : A new type of 99.9% pure graphite material without any additives. An excellent packing for thermic fluid application, it is radiation resistant, self lubricating and it is recommended for gasket, preformed rings for glands of valves and pumps at extremely high temperature. PH0 - 14.

FLEX-O-SEAL : This is a universal joint gasket material manufactured out of 100% pure PTFE, very spongy, suitable for all flanges. This material is also manufactured in the form of round ropes for valve gland applications, is resistant to high pressure and is non-toxic. An ideal sealing material for petroleum refining companies, paper mills, chemical plants glass-lined vessels, heat exchangers, pumps and compressors. PH0 - 14.

PTFE PRODUCTS : PTFE (POLYTETRAFLUOROETHYLENE) is an inert and non-toxic material. It has extreme resistance to chemical attack, excellent dielectric properties, a wide working temperature and a remarkably low coefficient of friction. PTFE fabrications, either alone or with asbestos or certain special synthetic fibre, have proved to be most successful and important components for general industrial purposes.

The products manufactured from this material are too wide and you may find numerous of them in a special catalogue which will be available on request.

FILLED PTFE : Filled grades have become firmly established Engineering Plastic with increasing experience of their use in wide range of scientific applications. The common fillers are Carbon, Graphite, Glass, Bronze plus Molybdenum Disulphide.

The reinforcing agents improve substantially resistance to wear, creep, increase thermal and electrical conductivity and reduces thermal expansion and safely used as Gaskets, Valve Seals, Bearings, Dynamic Seals and for Compression Rings.

PTFE LINED PIPES & FITTINGS : Most economical long lasting and quality product manufactured by extrusion process technology for chemical process industry where protection against hazardous material frequent replacement of costly pipes due to corrosion is eliminated and environmental pollution is avoided. Pipes and fittings upto 700 mm nominal bore. Bellows upto 1200 mm bore and various other products or ball valves, check valves are manufactured for various temperatures and pressure.

Detailed catalogue will be available on request

PTFE THREAD SEALANT TAPE : It is virtually a universal sealing material which can be used in pipes and joints as thread sealant to resist acid, solvent, oils etc.

CHEVRON O U V RINGS & SETS : Sets of 'V Shaped rings together with header and gland rings made to specifications from variety of materials including PTFE for sealing on all Hydraulics, Steam, Air, Gases etc.

Information supplied in this catalogue, is based on our general experience and faith, but because of the many particular factors which are outside our knowledge and control and affect the use of products, no warranty is given or is to be implied with respect to such information.

Mfg. : MECHANICAL PACKING INDUSTRIES PVT. LTD.

Mfg. by : **CHAMPION JOINTINGS PVT. LTD.**

Style No. "SPITMAAN"	Temperature & Presure	Service Recommendation
20 Steam	380° 35 Kg./sq.cm	<p>Compressed Asbestos Fibre Jointing ia a consistently uniform and resilient product. A price worthy quality of dependable performance, plus adaptability to many sealing requirements makes this 'STEAM' JOINTING the choice sheet packing of Plant Engineers and Maintenance men.</p> <p>SPITMAAN STYLE 20 Jointings are developed for general purpose applications and this quality is applicable to a wide range of duties with less severe working conditions temperature and pressure.</p> <p style="text-align: right;">(IS 2712- 1998 Grade W/3) (IS 2712 - 1971 Grade C.)</p>
51 High Pressure	440° 80 Kg./Sq.cm	<p>Manufactured from select Asbestos Fibre and bonded with high grade binder compound, this jointing has a wide range of applications is the industrial field and is recommended against Steam, Neutral non-flammable gases, lyes, alkaline solutions, fats and oils, alcohols, motor fuels and such other engineering service conditions which do not warrant the use of a High Grade material as SPITMAAN STYLE 54 SUPER.</p> <p style="text-align: right;">Indian : (IS 2712- 1998 Grade W/2) (IS 2712 - 1971 Grade B/S) DCS & D G/MISC/81-c item 12 (b) Commercial Quality British BS : 2815 - 1973 Grade B</p>
54 Super	550° 150 kg./sq.cm.	<p>Manufactured from excellent quality of Chrysotile Asbestos Fibre and raw materials, the blend being intimately mixed with heat resisting rubber compounds under special process, to ensure maximum stability against high pressure and temperatures. Though primarily a super heated steam jointing it is also recomended against saturated Steam, Oxygen, Petroleum distillates, oils and fats, fuels, internal combustion, engines, hydrocarbons, alcohols, solvents, lyes, etc. Its is popularly used in MARINE ENGINES, electricity generating sets etc.</p> <p style="text-align: right;">Indian : (IS 2712- 1998 Grade W/1) (IS 2712 - 1971 Grade A/S) DGS & D G/MISC/81-c item 12 (a) Commercial Quality British BS : 2815 - 1973 Grade A</p>
20 Metallic	415° 40 Kg./sq.cm.	<p>A compressed Asbestos Fibre Jointing with wire gauze insertion suplied with Graphite Finish. Used for general purpose application where conditions of temperature and pressure are not too servere.</p>
51 Metallic	480° 100 Kg./sq.cm	<p>A compressed Asbestos Fibre Jointing with wire gauze insertion supplied with Graphite Finish. Used for a wide range of industrial application and Engineering Service conditions which do not warrant the use of High grade material as SPITMAAN STYLE 54.</p>
54 Super Metallic	600° 160 kg./sq.cm.	<p>A compressed Asbestos Fibre Jointing Graphited embedded with a strong reinforcement of steel wire gauze, THE SUPER METALLIC gasket sheet is superior in performance over other forms of Jointing Sheets where serve physical conditions of High Pressure and temperature have to be resisted. It is effectively used under rapidly changing operating conditions of pressure, where vibrations are experienced, where the flange of the gasket joint is narrow, in diesel exhaust manifold, cylinder head gaskets, internal combustion engines and Air Compressors.</p>

Mfg. by : **CHAMPION JOINTINGS PVT. LTD.**

Style No. "SPITMAAN"	Temperature & Presure	Service Recommendation
39	440° 80 kg./sq.cm.	<p>Manufactured from selected quality of Asbestos Fibre and vulcanized with special rubber compound to meet with the exacting requirements of modern industry. Used for application against dry and wet steam, water, gases, alkalies, oil at normal temperatures, chemicals, fuels etc. and general engineering. SPITMAAN : Style 39 can also be provided with wire guaze insertion in graphited finish</p> <p style="text-align: right;">Indian : (IS 2712- 1998 Grade 0/2) (IS 2712 - 1979 Grade W/2) (IS 2712 - 1971 Grade B/S)</p> <p style="text-align: right;">British BS : 2815 - 1973 Grade B</p>
59 Oil	550° 150 Kg./sq.cm.	<p>A high grade Asbestos Fibre Jointing bonded with a sophisticated compound, this specialised jointing withstands the most exacting demands of oil and Petrochemicals plants, solvents refrigerator, oil etc. Used in pipe lines and apparatus of the petrochemical fields, petroleum distillates, oil and petroleum refining industries. It is also recommended in industrial processes with high contents of aromatic substances, sulphurous sheet assures safety and economy even on critical working conditions. The jointing gives satisfactory services against steam also.</p> <p style="text-align: right;">Indian : (IS 2712- 1998 Grade 0/1) (IS 2712 - 1971 Grade A/0) (DEFENCE TS RED/71/59, British BS 1832-1972)</p>
60 Acid	210° 150 kgVsq.cm.	<p>This is a specialised Asbestos Fibre Jointing Sheet which is intimately bonded with Acid resisting compound, to with stand the corrosive action of acids and chemicals. Recommended for use against hot concetrated organic, Inorganic and mineral acids including hydrochloric, sulphuric (oleum) and nitric acids, under service conditions of temperature and pressures commonly encountered in Chemicals Industries.</p> <p style="text-align: right;">Indian : (IS 2712- 1998 Grade A/1)</p>
11		<p style="text-align: center;">COMPRESSED ASBESTOS FIBRE JOINTING SHEETS</p> <p>Compressed Asbestos Fibre Jointing is a consistently uniform, solid run constructed and resilient product, a price worthy quality of dependable performance. Its adaptability to many sealing requirements makes this jointing the most ECONOMICAL Sheet packing choice of plant Engineers and maintenance men, for low service conditions. Jointing sheets are specially developed for general purpose applications for use against low pressure steam, water, gases and alkalies. Metallic jointing sheets with wire gauze reinforcement are available in Red / Graphite finish.</p> <p>Identity Colour : Red or Graphited Nominal Sheet Thickness : 0.4, 0.5, 0.75, 1, 1.5 mm & above Sheet Size Approx : Width Length 1525 mm x 1650 mm to 5000 mm</p> <p>TECHNICAL DATA</p> <p>Recommended Maximum Temperaure : 360°C Recommended Maximum Pressure : 25 bars Specification Compliance : IS 2712-1998 Grade W/3 IS 2712-1971 Grade C.</p> <p>Density : 1.7 to 2 gm/cm3 Tensile Strength : 8MPa Compressibility : 10%</p>



Mfg. by : **CHAMPION JOINTINGS PVT. LTD.**

SAMSONITE
COMPRESSED FIBRE JOINTING

DESCRIPTION : Compressed Fibre Jointing is a consistently uniform and resilient product. A price worthy quality of dependable performance, plus adaptability to many sealing requirements makes this JOINTING the ECONOMICAL sheet packing of Plant Engineers and Maintenance men.

SAMSONITE Jointings are developed for general purpose applications and this quality is applicable for use against low pressure steam, water, gases and alkalies.

SAMSONITE METALLIC JOINTING SHEETS with wire gauze insertion is also supplied with Graphite Finish in 1500 mm width x 1650 mm to 5000 mm length.

SAMSONITE ECONO L. P. STEAM

Identity Colour : Red or Graphited

Nominal Sheet Thickness Approx. : 0.4, 0.8, 1.5, 3.0, 5.0 mm

Sheet Size Approx : 1525mm Width x 1650mm to 5000 mm Length

Tolerance : Variations Limits : Width 1450mm 50 1575 mm x Length 1500 m to 1700 mm

TECHNICAL DATA

Recommended Maximum Temperature : 350°C

Recommended Maximum Pressure : 20 kg./sq.cm.

Specification Compliance : IS 2712-1979 Grade W/3, IS 2712-1971 Grade C.

COMPRESSED ASBESTOS FIBRE JOINTING SHEETS

“Spitmaan” jointing sheet technology is based on tradition which stretches back over few decades. With close co-operation with our customers, by constant development of composition of materials and by use of high quality raw materials, the company has produced reliable gasketing products, which always correspond to the latest state of technology.

“Spitmaan” products are developed with the strong belief on the proven fact that the most qualitative gasket is cheaper than the work necessary for changing an improper gasket.

MAJOR TECHNICAL FEATURES

STYLE	TENSILE STRENGTH N / mm ²	STRESS RESISTANCE N / mm ²	COMPRESSIBILITY %	RECOVERY %	IGNITION LOSS %
20	9.5	20	7.5-12	≥42.5	≤20
20 M	12.0	20	7-12	≥45	≤22
51	18.0	23	7-12	≥45	≤22
51 M	20.0	23	7-12	≥45	≤20
39	18.0	23	7-12	≥45	≤22
54 Super	28.0	28	6.5-11.5	≥50	≤25
54 Super M	30.0	30	7-10.5	≥50	≤22
59 Oil	28.0	30	7-10.5	≥50	≤25
60 Acid	27.0	25	7-12	≥45	≤25

Also available with antistatic Polymer / Graphite surface coating.

Tests : Tests are conducted in our laboratory equipped with latest testing equipments according to international test specifications & ISI. Some of the important tests carried out are for Compressibility, Recovery, Stress relaxation, Flexibility & Resistance to fluid media, besides the routine tests for tensile strength, ignition loss, density, etc.

“Spitmaan” Metallic jointing sheets : With the operating temperature and pressure high and when the effective gasket area is small, jointing sheets with wire gauze reinforcement are suggested to be used.



Mfg. by : CHAMPION JOINTINGS PVT. LTD.

COMPRESSED ASBESTOS FIBRE JOINTING SHEETS

Insist on Quality - Insist on Spitmaan

Gasket Selection

Gaskets must maintain a seal for an acceptable period against all of the operational forces involved and to achieve this, there are eight important properties which any good gasket should possess.

- The gasket should not be porous to the fluid being sealed.
- The gasket should compress into the imperfections on the flange to create initial seal on application of sealing force.
- The gasket should not show significant creep under the influence of load and temperature. Such flow will allow the bolts to relax, reduce gasket surface stress and cause leakage.
- The gasket should be capable of catering to slight distortion between the flanges.
- The gasket should withstand chemical attack "from the media being handled.
- The gasket has to be easily dismantled after use.
- The gasket should not cause corrosion of the flange faces.

(Please visit our website for the questionnaire form to be filled and sent to us for our guidance on appropriate style selection for any new/existing applications)

Spitmaan Asbestos fibre jointing sheets are manufactured on latest factory equipments and developed with the aid of research and scientific facts to take care of one and all of above factors combined with highly specialised technical knowledge of Engineers with experience of a life time. Our products meet with the increasingly for requirements in Engineering and chemical industries for contact gaskets on fixed sealing faces. Spitmaan Asbestos fibre jointing sheets are manufactured to international quality standards, which our customers can depend upon. The operating temperature for Asbestos fibre jointing sheet material is related to the thickness selected. Thinner materials offer better temperature and pressure properties.

Proper Bolting Procedure

The sequence in which bolts are tightened has a substantial bearing upon the distribution of contact area stress. Improper bolting may cock the flange out of parallel. It is important for proper sealability that the flanges are clean and free from any serious defect.



Mfg. by : CHAMPION JOINTINGS PVT. LTD.

COMPRESSED FIBRE JOINTINGS RECOMMENDATION CHART

	Style 54 Super Metallic	Style 54 Super	Style 60 Acid	Style 59 Oil	Style 39	Style 51 High Pressure	Style 20 Steam
AIR & GASES							
Air	B	A	B	B	B	B	B
Argon	B	A	B	B	B	B	B
Butane	C	B	C	A	C	C	C
Carbon Dioxide	B	A	B	B	B	B	B
Coal Gas	B	A	B	B	B	B	B
Ethane	C	B	C	A	C	C	C
Hydrogen	B	A	B	B	B	B	B
Methane	C	B	C	A	C	C	C
Natural Gas	B	A	B	B	B	B	B
Nitrogen	B	A	B	B	B	B	B
Oxygen	B	A	B	B	B	B	B
Propane	C	B	C	A	C	C	C
Sulphur Dioxide (dry)	C	C	B	C	X	X	X
FOOD & DRINK							
Cane / Sugar / Juice	B	A	C	A	B	B	B
Castor Oil	B	A	X	A	B	X	X
Food Products	B	A	C	B	B	B	B
Milk	B	A	B	B	B	B	B
Vegetable Oils	B	A	B	A	B	X	X
Fruit Juices	B	A	B	B	B	B	B
Syrups	B	A	B	V	A	B	B
Vinegar	B	A	B	B	B	B	C
Wine / Whisky	B	A	B	A	B	B	B
GENERAL CHEMICALS							
Alum	B	A	B	B	B	B	B
Bleach Liquor	B	A	B	B	B	B	B
Borax	B	A	B	B	B	B	B
Bromine	C	C	C	C	C	C	C
Calcium Carbonate	B	A	B	B	B	B	B
Calcium Chloride	B	A	B	B	B	B	B
Chlorine	C	C	C	C	C	C	C
Chlorobenzene	C	C	C	C	C	C	C
Chlorobenzene	C	C	C	C	C	X	X
Copper Sulphate	B	A	B	B	B	B	B
Dowtherm	X	B	X	B	X	X	X
Ether	B	B	B	A	B	B	B
Ethyl Acetate	C	C	C	C	C	X	X
Ethyl Alcohol	B	B	X	A	B	B	B
Ferric Chloride	C	B	B	B	B	B	B
Glycerin	B	A	B	B	B	B	B
Hydrogen Peroxide (20 vols)	C	C	C	C	C	C	C
Lye	B	A	B	B	B	B	B

A - Recommended B - Suitable C - Resistant but Conditional X - Not Recommended

Mfg. by : CHAMPION JOINTINGS PVT. LTD.



	Style 54 Super Metallic	Style 54 Super	Style 60 Acid	Style 59 Oil	Style 39	Style 51 High Pressure	Style 20 Steam
Methyl Acetate	C	C	C	C	C	X	X
Methyl Alcohol	B	A	C	B	B	B	B
Methyl Chloride	C	C	C	C	C	X	X
Methylene Chloride	C	C	C	C	C	X	X
Pentane	C	B	X	A	C	X	X
Sewage	B	B	B	B	B	B	B
Sodium Salts	B	B	B	B	B	B	B
Sodium	B	B	B	B	B	B	B
Sodium Sulphite	B	B	B	B	B	B	B
Sodium Thiosulphate	B	B	B	B	B	B	B
Tin Sodium Phosphate	B	B	B	B	B	B	B
Zinc Sulphate	B	B	B	B	B	B	B
ORGANIC SOLVENTS							
Acetone	B	B	X	A	B	B	C
Alcohol	B	B	C	A	B	B	C
Benzene	C	B	X	B	C	X	X
Carbon Disulphide	X	X	B	X	X	X	X
Carbon Tetrachloride	C	C	C	C	C	X	X
Cellosolve	C	B	X	B	C	X	X
Chloroform	C	C	C	C	C	X	X
Cyclohexane	C	C	C	C	C	X	X
Cyclohexenol	B	B	X	B	B	X	X
Heptane	B	B	X	B	B	X	X
Iso-propyl Alcohol	B	B	C	A	B	B	C
Ketones	B	B	X	A	B	B	B
Nephata	C	B	X	B	C	X	X
Nitrobenzene	X	C	X	C	X	X	X
Perchlorethylene	C	C	C	C	C	C	C
Propyl Acetate	C	C	C	C	C	X	X
Tetrachlorethylene	C	C	C	C	C	X	X
Toluene	C	B	X	B	C	X	X
Trichlorethylene	C	C	C	C	C	X	X
Triethylamine	X	C	X	C	X	X	X
Turpentine	C	B	B	A	C	X	X
White Spirit	C	B	B	A	C	X	X
Amyl Acetate	C	C	C	C	C	X	X
OIL & DISTILLATES							
Aromatic Fuels	C	B	X	B	B	X	C
Aviation Fuel	C	B	X	B	B	X	X
Benzine	C	B	X	B	C	B	B
Diesel Fuel	C	B	X	B	C	X	X
Creosote	C	B	X	B	C	X	X
Gasoline	C	B	X	B	C	X	X
Hydrocarbons	C	B	X	B	C	X	X
Kerosene	B	B	X	B	C	X	X
Methylated Spirit	B	B	C	A	B	X	X

A - Recommended B - Suitable C - Resistant but Conditional X - Not Recommended

Mfg. by : CHAMPION JOINTINGS PVT. LTD.



	Style 54 Super Metallic	Style 54 Super	Style 60 Acid	Style 59 Oil	Style 39	Style 51 High Pressure	Style 20 Steam
Paraffin	C	B	X	B	C	X	X
Petrol	C	B	X	B	C	X	X
Petroleum Ether/Spirit	C	B	X	A	C	X	X
Raffinate	C	B	X	A	V	X	X
Bunker C. Fuel	B	B	X	A	B	X	X
Coconut	B	B	X	A	B	X	X
Cottonseed	B	B	X	A	B	X	X
Crude	C	B	X	A	C	X	X
Diesel	C	B	X	A	C	X	X
Engine	C	B	X	A	C	X	X
Fuel	C	B	X	A	C	X	X
Gas	B	B	X	A	C	X	X
Heavy	C	B	X	A	C	X	X
Hydraulic	C	B	X	A	C	X	X
Hydrogenated	B	B	X	A	B	X	X
Light	C	B	X	A	B	X	X
Linseed	B	B	X	A	B	X	X
Lubricating	C	B	X	A	B	X	X
Mineral	C	B	X	A	C	X	X
Naphthanic	C	B	X	A	C	X	X
Netural	C	B	X	A	B	X	X
Paraffin Base	C	B	X	A	B	X	X
Quenching	C	B	X	A	C	X	X
Rape-seed	B	B	X	A	B	X	X
Refrigeration	C	C	X	A	B	X	X
Residue	C	B	X	A	C	X	X
Rich	C	B	X	A	C	X	X
Siliconw	C	B	X	A	C	C	C
Slop	B	B	X	A	B	C	C
Soda solution	B	B	X	A	A	C	C
Spindle	C	B	X	A	C	X	X
Transformer	C	B	X	A	C	X	X
Vaccum Distillate	C	B	X	A	C	X	X
WATER							
Boilor feed	A	A	X	A	B	C	C
Cold	A	A	X	A	A	A	A
Condensate	B	A	X	B	A	B	B
Distilled	B	A	X	B	B	B	X
Hot	B	A	X	B	A	B	X
Sea	B	A	X	B	B	B	B
Soapy	X	A	X	A	B	B	B
STEAM							
Saturated	A	A	X	B	A	A	A
Superheated							
Upto 375 PSI	A	A	X	B	A	A	B
Upto 600 PSI	A	A	X	B	A	B	X

A - Recommended B - Suitable C - Resistant but Conditional X - Not Recommended



Mfg. by : CHAMPION JOINTINGS PVT. LTD.

	Style 54 Super Metallic	Style 54 Super	Style 60 Acid	Style 59 Oil	Style 39	Style 51 High Pressure	Style 20 Steam
Upto 1200 PSI	A	A	X	B	B	X	X
Upto 1500 PSI	B	A	X	V	X	X	X
Upto 2000 PSI	B	A	B	X	X	X	X
Over 2000 PSI	C	C	X	C	X	X	X
ACIDS						i	
Acetic, glacial	X	B	A	B	B	B	C
Benzoic	C	B	A	B	B	B	C
Carbolic (Phenol)	C	B	X	B	C	X	X
Chromic	X	C	A	C	X	X	X
Cresylic	C	B	X	B	C	C	C
Formic	X	B	A	B	C	C	C
Hydrochloric (cone.)	X	B	A	B	C	C	X
Hydrochloric (dilute)	X	B	A	B	C	C	X
Hydrofluoric	X	X	B	X	X	X	X
Nitric (cone.)	X	X	B	X	X	X	X
Nitric (dilute)	X	X	B	X	X	X	X
Oleum (fuming Sulphuric)	X	X	C	X	X	X	X
Phosphoric	X	B	A	B	B	C	X
Sulphuric (cone.)	X	C	A	C	X	X	X
Sulphuric (dilute)	X	C	B	C	X	X	X
Sulphurous	X	B	A	B	B	C	X
Tar	X	B	A	A	B	C	C
ALKALIS							
Ammonia, Anhydrous / Aqua	B	A	B	A	B	B	C
Caustic Liquor	X	A	B	A	B	C	X
Oil/Soda Solution	B	A	B	A	B	B	B
Potassium Hydroxide Solution	B	A	B	A	B	B	C
Sodium Hydroxide Solution	B	A	B	B	B	B	B
Sodium Silicate	B	A	B	B	B	B	B
REFRIGERANTS							
Ammonia, Anhydrous/Aqua	B	A	B	B	B	B	C
Freons	X	A	B	B	B	B	C
Ethylene Glycol	C	C	X	B	X	X	X
Oil and Ammonia	X	C	X	B	C	C	X
Oil and Freon 11, 12 or 22	X	C	X	B	X	X	X
Oil and Methylene Chloride	X	C	X	B	X	X	X
Oil and sulphur Dioxide	X	C	X	B	X	X	X

A - Recommended B - Suitable C - Resistant but Conditional X - Not Recommended

Mfg. by : **CHAMPION JOINTINGS PVT. LTD.**

COMPRESSED NON - ASBESTOS

Style No.	PRODUCT PROFILE	* SERVICE CONDITIONS
AF 111	<p>A cost effective product manufactured from ecofriendly natural cellulosic fibres bonded with suitable mix of elastomers.</p> <p>Colour : Red & Green</p> <p>Also available with wiregauze reinforcement and antistick coating</p>	<p>General purpose gasket material suitable for use with oils, Solvents, Gases, Water, L.R Steam and most dilute acids and alkalis (Low service conditions)</p> <p>Max. Operating Pressure : 25 bars</p> <p>Max. Short Term Service Temperature 400°C</p> <p>Max. Continuous Service Temperature 250°C</p> <p>Max. Operating Temperature for Steam 180°C</p>
AF 120	<p>A compressed synthetic Aramid fibre jointing sheet bonded with elastomers to create a matrix of stability</p> <p>Colour : Green</p> <p>Also available with wiregauze reinforcement and antistick coating.</p>	<p>Suitable for light industrial applications</p> <p>Media : Water, Gases, Medium Pressure Steam, Dilute Acids/ Alkalies</p> <p>(Medium Service Conditions)</p> <p>Max. Operating Pressure : 50 bars</p> <p>Max. Short Term Service Temperature 400°C</p> <p>Max. Continuous Service Temperature 250°C</p> <p>Max. Operating Temperature for Steam 200°C</p>
AF 139	<p>A high quality jointing sheet based on synthetic Aramid fibres bonded with NBR elastomer.</p> <p>Colour : Orange</p> <p>Also available with wire gauze reinforcement and antistick coating.</p>	<p>Suitable for use in applications involving hydrocarbons such as oils and solvents, steam, gases, glycols and aqueous solutions.</p> <p>(Medium Service Conditions)</p> <p>Max. Operating Pressure : 80 bars</p> <p>Max. Short Term Service Temperature 400°C</p> <p>Max. Continuous Service Temperature 250°C</p> <p>Max. Operating Temperature for Steam 200°C</p>
AF 159	<p>A Premium grade jointing sheet based on special synthetic Aramid fibres bonded with nitrile elastomer</p> <p>Colour : Grey</p> <p>Also available with wire gauze reinforcement and antistick coating.</p>	<p>A universal grade suitable for many industrial sealing applications, media : Hot oils, fuels, Hydrocarbons and refrigerants.</p> <p>(High Service Conditions)</p> <p>Max. Operating Pressure : 150 bars</p> <p>Max. Short Term Service Temperature 450°C</p> <p>Max. Continuous Service Temperature 250°C</p> <p>Max. Operating Temperature for Steam 250°C</p>
AF 154	<p>A superior performance compressed jointing sheet incorporating a blend of special heat resisting Aramid fibres with a high quality nitrile elastomer binder</p> <p>Colour : Yellow</p> <p>Also available with wire gauze reinforcement and anti stick coating.</p>	<p>Suitable for use with Oils, Solvents, Gases, Steam, Dilute Acids and alkalis.</p> <p>(High Service Conditions)</p> <p>Max. Operating Pressure : 150 bars</p> <p>Max. Short Term Service Temperature 450°C</p> <p>Max. Continuous Service Temperature 250°C</p> <p>Max. Operating Temperature for Steam 290°C</p>
AF 160	<p>A top quality acid resistant compressed synthetic Aramid fibre jointing sheet bonded with special binders.</p> <p>Colour : Blue</p> <p>Available with antistick coating.</p>	<p>Acid resistant grade. Recommended for use against hot, Concentrated Organic / inorganic/mineral acids.</p> <p>Max. Operating Pressure : 150 bars</p> <p>Max. Short Term Service Temperature 250°C</p> <p>Max. Continuous Service Temperature 210°C</p> <p>Max. Operating Temperature for Steam 210°C</p>

Mfg. by : CHAMPION JOINTINGS PVT. LTD.

JOINTING SHEETS - DATA SHEET

TYPICAL PHYSICAL PROPERTIES			FLUID RESISTANCE			
			ASTM Oil No. 3		Fuel B	
			Thickness Increases %	Mass Increases %	Thickness Increases %	Mass Increases %
Density		1.75 g/cm ³				
Tensile Strength	ASTM F 152	8.56 MPa				
Compressibility	ASTM F 36	8 - 13%				
Residual Stress	BS 7531	22 MPa				
Gas Permeability	BS 7531	< 0.5 cc/Min				
Recovery	ASTM F 36	≥ 45 %				
Water Absorbtion	BS 7531	≤ 5%	≤ 10	≤ 10	≤ 10	≤ 10
Ignition Loss		≤ 40%				
Density		1.9 g/cm ³				
Tensile Strength	ASTM F 152	11.5 MPa				
Compressibility	ASTM F 36	8-11%				
Residual Stress	BS 7531	22 MPa	≤ 10	≤ 10	≤ 10	≤ 10
Gas Permeability	BS 7531	< 0.5 cc/Min				
Recovery	ASTM F 36	≥ 45 %				
Water Absorbtion	BS 7531	≤ 5%				
Ignition Loss		≤ 30%				
Density		1.85 g/cm ³				
Tensile Strength	ASTM F 152	14 MPa				
Compressibility	ASTM F 36	8 - 12%				
Residual Stress	BS 7531	22 MPa				
Gas Permeability	BS 7531	< 0.5 cc/Min	≤ 8	≤ 8	≤ 8	≤ 8
Recovery	ASTM F 36	≥ 40 %				
Water Absorbtion	BS 7531	≤ 5%				
Ignition Loss		≤ 35%				
Density		1.7 g/cm ³				
Tensile Strength	ASTM F 152	15 MPa				
Compressibility	ASTM F 36	7-11%				
Residual Stress	BS 7531	25 MPa				
Gas Permeability	BS 7531	< 0.1 cc/Min	≤ 8	≤ 8	≤ 8	≤ 8
Recovery	ASTM F 36	≥ 50 %				
Water Absorbtion	BS 7531	≤ 5%				
Ignition Loss		≤ 35%				
Density		1.8 g/cm ³				
Tensile Strength	ASTM F 152	15 MPa				
Compressibility	ASTM F 36	7-11%				
Residual Stress	BS 7531	25 MPa				
Gas Permeability	BS 7531	< 0.1 cc/Min				
Recovery	ASTM F 36	≥ 50 % Water	≤ 8	≤ 8	≤ 8	≤ 8
Absorbtion	BS 7531	≤ 5%				
Ignition Loss		≤ 35%				
Density		1.8 g/cm ³				
Tensile Strength	ASTM F 152	15 MPa				
Compressibility	ASTM F 36	8 - 12%				
Residual Stress	BS 7531	25 MPa				
Gas Permeability	BS 7531	< 0.1 cc/Min				
Recovery	ASTM F 36	≥ 50 %	≤ 8	≤ 8	≤ 8	≤ 8
Water Absorbtion	BS 7531	≤ 5%				
Ignition Loss		≤ 35%				

Mfg. by : **CHAMPION JOINTINGS PVT. LTD.**



SPIRAL WOUND METALLIC GASKETS

For Sealing Pressures and Vacuum to 175 KG/CM² and Temperatures upto 565° C in Flanged Joints, Boiler Tubecaps, Handholes, Manholes... Against Oils, Steam, Gases and Liquids.

Applications Include Oil Refineries, Chemical, Petro Chemical, Marines, Power Plants, Pulp and Paper and other Processing Plants.

CONSTRUCTION

Special Spring like Metal strips are wound with an Asbestos Filler by a special process to assure a leakproof seal. The sealing is done by the Asbestos Filler and the metal strips provides the spring. This combination of metal and soft Asbestos Filler plies compresses to its predetermined thickness under bolting pressure and thereby preventing leakage within the limit of its specified pressure and temperature ranges. With the addition of Centering devices, adapt "CHAMPION" Gaskets to use on many types of flanges and closures.

MATERIALS

Standard materials are type 304 Stainless steel with white Canadian (Chrysotile) Asbestos Filler.

Materials available are :

METALS

Type 304 Stainless
Type 316 Stainless
Aluminium
Copper
Monel
Steel, Plain
Steel, Zinc Coated

FILLERS

Compressed Asbestos Jointing Strips
P.T.F.E. Sintered Strip
Asbestos paper
White Chrysotile Asbestos
Blue African Crocidolite
GRAFSEAL

GASKET THICKNESS AVAILABLE

NORMAL

1/8" (3.2 mm)
3/16" (4.8 mm)

ACTUAL

.125" ± .005" (3.2 mm)
.175" ± .005" (4.5 mm)

HINTS OF INSTALLATION & MAINTENANCE

When installing a Spiral Wound Gasket, check the dimension of the Gaskets for use between pipe and pressure vessel flanges. The procedure is as follows :

Measure ID of flange contact face.

Measure Gasket ID. If Gasket ID is not 1/8" larger than flange ID, do not use it unless it can be installed perfectly centered.

A Spiral Wound Gasket does not have the same feel as other Metallic or Non-Metallic Gaskets during the bolting-up. It's

different-because it gives a little bit under each, bolt as it is tightened. It is therefore important to tighten the bolts in small

steps in proper sequence as shown hereunder. Final tightening must be uniform with each bolt pulling same load. This will guarantee a trouble joint. If not uniform the joint may leak-particularly after it has been in hot service. Tighten the bolts after 24 hours and again a week later.

HOW TO ORDER

When ordering "CHAMPION" Spiral Wound Gaskets, give the following information :

- 1) Quantity
- 2) Gasket shape
- 3) Inside and Outside Dimension of Gaskets
- 4) Flange width
- 5) Gasket Thickness
- 6) Operating Pressure
- 7) Operating Temperature

House of Rubber Gasket Packing Sheeting Rubber Matting Rubberised Fabrics Speciality Rubber Products Out Product Gives U More Productivity Through Reduce Maintenance

Gasket Rubber Packing Sheeting (Lable Quality) 1 mtr x 2 mtr, 1.2x2.4 mtr. & Long length, thickness up to 25 mm.

Code	Item Description	Specific Gravity	Hardness Shore A	Colour	Quantity	Application
S-9	General Pupose Rubber Packing Sheet	1.90 ± 0.10	60 ± 5	Black	Comercial	Flange Gesket Packing to avoid leakages form air, water & inorganic Chemicals
S-20	General Purpose Rubber Packing Sheet	1.80 ± 0.10	65 ± 5	Black	Comercial	
S-155	Best Quality for Gasket & Packing Sheet	1.55 ± 0.10	55 ± 5	Black/Red	Medium	Flange Gesket Packing Machinery Packing Pad, Resistance to vibration & Shock absorber.
S-140	Low Specific Gravity, Soft Quality for Gasket Packing Pads & Florring Sheet	1.45 + 0.10	50 ± 5	Black/Red	Best	

NATURAL / SBR Rubber packing Sheet 1 mtr x 2 mtr, 1.2x2.4 mtr. & Long length, thickness up to 50 mm

Code	Item Description	Specific Gravity	Hardness Shore A	Tensile Kgf/CM ²	Elongation %	Application
P-155	Stiff quality rubber packing sheet general purpose	1.70 ± 0.10	70/75	25	200	Stiff Quality For sealing & Packing Gasket, Mounting Pads, antivibrationand Shop Flooring Purpose
P-135	Best Quality Rubber packing Sheet for pharmaceutical industries	1.50 ± 0.10	55/56	30	200	
S-125	Para quality rubber sheet for shot-sand blasting purpose	1.30 + 0.10	35/45 55	35	250	Para Quality for Shot-sand Basting machinery.
SB-9	SBR Rubber packing sheet Abrasion resistance for skirtt boards	1.50 ± 0.10	60/70	70	350	High abrasion resistance sheet for skirt boards

Neoprene Rubber Packing Sheeting 1 mtr x 2 mtr, 1.2x2.4 mtr. & Long length, thickness up to 50 mm

Code	Item Description	Specific Gravity	Hardness Shore A	Tensile Kgf/CM ²	Elongation %	Application
NP-15	15% neoprene rubber packing sheet	1.65 ± 0.10	65	35	200	Sealing, gasket and packing purpose medium quality to modarate oil, heat, weather, UV, ozone, water, air, acid and alkali chemical resistance rubber packing sheet useful as mechenical and marine parts. temperature resistance -20°C +95° C
NP-30	30% neoprene rubber Packing sheet	1.55 ± 0.10	60	35	200	
NP-50	50% neoprene rubber packing sheet	1.55 + 0.10	60	40	250	
NP-100 A	100 % neoprene rubber packing sheet	1.50 ± 0.10	55	50	300	

Nitrile Rubber Packing Sheet

1 mtr x 2 mtr, 1.2x2.4 mtr. & Long length, thickness up to 25 mm

(Oil & solvent resistance rubber packing sheet)

Code	Item Description	Specific Gravity	Hardness Shore A	Tensile Kgf/CM ²	Elongation %	Application
NT-25	25% Nitrile rubber packing sheet	1.60 ± 0.10	60	50	300	Sealing, gasket and packing purpose best quality to Avoid leakages from oil, Solvent and petroleum base Fluids, lubricating oil and Transformer fluides, low Temperature flex, temperature Resistance - 20°C + 110°C
NT-50	50% Nitrile rubber packing sheet	1.50 ± 0.10	65	50	300	
NT-100A	100% Nitrile rubber packing sheet	1.45 ± 0.10	60	70	300	
NT-100	100% Nitrile rubber Abrasion resistance for skirt boards	1.30 + 0.10	55	80	350	

EPDM Rubber Packing Sheet

1 mtr x 2 mtr, 1.2x2.4 mtr. & Long length, thickness up to 50 mm

(Best quality rubber packing sheet for ozone, weather, UV, and heat resistance up to 140°C)

Code	Item Description	Specific Gravity	Hardness Shore A	Tensile Kgf/CM ²	Elongation %	Application
EP-25	25% EPDM rubber packing sheet	1.60 ± 0.10	60/75	30	250	Sealing, gasket and packing Liner purpose best quality for Mechanical and marine parts, Excellent protection against Sunlight, uv, ozone, insulation, And heat. Temperatur Resistance - 40°C + 140°C
EP-50	50% EPDM rubber packing sheet	1.50 ± 0.10	60/70	50	300	
EP-100	100% EPDM rubber packing sheet-Medium quality	1.35 ± 0.10	60/70	80	350	
EP-100	100% EPDM rubber packing sheet - Best Quality	1.15 ± 0.10	60/70	120	350	

Speciality Rubber Packing Sheet

1 mtr x 2 mtr, 1.2x2.4 mtr. & Long length, thickness up to 50 mm.

Code	Item Description	Specific Gravity	Hardness Shore A	Tensile Kgf/CM ²	Elongation %	Application
Sil-150	Medium quality Silicom rubber sheet available in red / white / orange colour	1.50 ± 0.10	60	40	250	Outstanding temperature Range up to 25°g with Excellent ozone, weather And oil resistance. low Level of toxicity.
Sil-130	Best quality Silicon rubber sheet available in red / white / orange colour	1.30 ± 0.10	55	60	300	
EP-65	Pulveriser liner sheet for power stations EPDM rubber Sheet as cushion pad liner	1.20 ± 0.10	65	120	350	Special quality for coal Pulveriser unit as liner Cum cushion pads
BR-287	Special quality for neutron Radiation shielding Flexible rubber sheet	1.40 ± 0.10	70	30	200	Extra ordinary quality to Resist thermal neutron Radition for nuclear Laboratories and power Stations

Rubber Netting (Anti Skid/Electrical Insulation) 1 mtr x 2 mtr, 1.2x2.4 mtr. & Long length, thickness up to 25 mm

Code	Item Description	Specific Gravity	Hardness Shore A	Design	Application
EI-9	Electrical insulated rubber matting up to 11 KV	1.70 ±0.10	65 + 5	chequered/fluted/corrugated	Electrical insulated sheet available in size of 1 mtr x 2 mtrs. frm 6.5mm to 25 mm thicknesses
EI-33	Electrical insulated rubber Matting up to 33 kv	1.60 ±0.10	65 + 5	chequered/fluted/corrugated	
As-9	Anti-skid matting red/black/ Grey colour	1.60 + 0.10	55 ± 5	chequered/fluted/corrugated	Anti-skid matting for flooring purpose in chemical plants size: 1.2 mtr x long length x 3 mm thickness.
As- 14	Anti-skid matting red/black/ grey Colour for flooring pupose	1.45 ± 0.10	50 ± 5	chequered/fluted/	

Rubberised Fabrics

- Rubberised Fabrics for safety at work, storage and Transporation containers, hospital requirement, radiation resistance, apron and covers, tent and water beds and for protection against chemical, chlorine and gas, membrane fabrics as well as specialised fabrics.
- Basic Fabrics as Nylon, Polyester, Cotton and Fibreglass Coating from Rubber Such as Natural, Neoprene, Nitrile, EPDM, viton and Hypalon for Variable Applications in the area of Aviation, Marine, Nuclear, defense, Insulation, Offshore and Oil Fields.
- Rubberised Fabrics are available in size of 1.2 Mtrs. width x Long Length form Thicknesses Range from 0.2 mm to 6.00 mm.



NATRAJ
RUBBER SHEET

Mfg. by : Natraj Rubbers

Established in 1984 as a tiny compounding unit, today NATRAJ RUBBERS has grown into a flourishing Rubber Industry with Quality Rubber Sheetings and Rubber Houes

Our spectrum of products includ White, Black, Coloured Rubebr Sheets-Plain / Checkered / Fluted Antiskid Rubber Mattings (Fluted & Checkered)

All types of calendered Rubber Sheeting in Natural & Synthetic Rubbers, with or without insertion of any kinds of cloth

Ozone & Weather Resistant Rubber Sheet

Steam & Chemical Resistant Rubber sheet

Woven Wraped High Pressure Hoses upto 1.5m length for all purposes

Industrial Rubber Hoses for Water, Oil, Gas, Air and Chemicals

We specialise in the field of Rubber Insertion (with ply of cloth) & Plain Packing sheets (without ply of cloth) manufactured by Precision Machinery, Experienced Technocrats, Quality Inspection Instruments & Professional Management Systems.

As per the customer's specifications, we make our products from a variety of polymer namely - Natural Rubber, SBR, Nitrile, Neoprene, EPDM, Silicon, Viton & Hypalon. Out standard items have a range of thickness, sizes, hardness and their combinations. Our valued Clientele compromise of Sugar Factories, Cement Factories, Chemicals & Fertilier Industries, Thermal Power Stations, Port, Railways, State Transports, Govt. & Semi Govt. Organisations, Textiles & Paper Industries, Automobiles & Automotive Industries & their Ancillary Indsutries.

To ensure quality products as per I.S. 638 Specification, we have well equipped inhouse lab for Physical Testing and Chemical Analysis.

Due dedication and perseverance, satisfying the expanding market, has earned us a goodwill in the field of Rubber Industry.



MANUFACTURER OF CALENDERED RUBBER SHEETS PRODUCT LIST FOR NATURAL RUBBER SHEETS

SR. NO.	PRODUCT CODE	SPECIFIC GRAVITY	HARDNESS SHORE-A (°)	QUALITY	COLOR	PROPERTIES AND APPLICATION
1	NRCM24070	2.4+7- 0.1	70 +/- 5	PLAIN OR INSERTION	WHITE BLACK	THESE ARE GENERAL PURPOSE RUBBER SHEETS USED TO MAKE SEALING GASKETS FOR JOINTS IN CONNECTIONS OF AIR/WATER/GASES PIPELINES AND VALVES. THEY ARE ALSO USED AS ANTI-VIBRATION PADS AND GENERAL INSULATION.
2	NRCM21070	2.1 +/-0.1	70 +/- 5	PLAIN OR INSERTION	WHITE BLACK	
3	NR18075	1.8+/-0.1	75 +/- 5	PLAIN OR INSERTION	WHITE BLACK	
4	NR16070	1.6+/-0.1	70 +/- 5	PLAIN	WHITE BLACK	
5	NR15070	1.5+/-0.1	70 +/- 5	PLAIN	WHITE BLACK	
6	NR13560	1.35+7- 0.1	60 +/- 5	PLAIN	WHITE BLACK	

NOTE : NORMAL TEMP. RANGE FOR THE ABOVE RUBBER SHEETS IS (0°C TO +70°C)

PRODUCT LIST FOR NATURAL / SBR RUBBER SHEETS

SR. NO.	PRODUCT CODE	SPECIFIC GRAVITY	HARDNESS SHORE-A (°)	QUALITY	COLOR	PROPERTIES AND APPLICATION
1	SKBD12560	1.25+7- 0.1	60 +7- 5	PLAIN	BLACK	THESE TYPES OF RUBBER SHEETS HAVE RESISTANCE TO HIGH PRESSURE AIR ABRASION. THEY ARE ALSO CUT AND WEAR RESISTANT. USED AS CURTAINS FOR SAND-SHOT BLASTING CHUTELININGS, CONVEYOR SKIRT-BOARDS, BELT WIPERS, MOUNTING PADS AND SEALING STRIPS.
2	SKBD12550	1.25+7-0.1	50 +7- 5	PLAIN	BLACK	
3	SKBD11545	1.15+7-0.1	45 +7- 5	PLAIN	BLACK	
4	ABR12550	1.25+7-0.1	50 +7- 5	PLAIN	BLACK	
5	ABR11545	1.15+7-0.1	45 +7- 5	PLAIN	BLACK	
6	ABR11040	1.1 +7-0.1	40 +7- 5	PLAIN	BLACK	
7	TGFX12050	1.2+7-0.1	50 +7- 5	PLAIN	WHITE GREY	THESE ARE HIGHLY FLEXIBLE FOR USE AS SEALS, BUSHINGS, BUMPERS, BELLOWS AND GROMMETS.
8	PAFX10240	1.02+7-0.1	40 +7- 5	PLAIN	WHITE GREY	

NOTE : NORMAL TEMP. RANGE FOR THE ABOVE RUBBER SHEETS IS (0°C TO +70°C)

PRODUCT LIST FOR NEOPRENE RUBBER SHEETS

SR. NO.	PRODUCT CODE	SPECIFIC GRAVITY	HARDNESS SHORE-A (°)	QUALITY	COLOR	PROPERTIES AND APPLICATION
1	NPR15070	1.5+/-0.1	70 +/- 5	PLAIN	BLACK	THESE TYPES OF SHEETS ARE RESISTANT TO COLD MINERAL OILS, ACIDS AND AGEING. HENCE FINDS USE AS ANTI-VIBRATION STRIPS / PADS, WEAR AND MOUNTING PADS, SEALING GASKETS/PACKINGS FOR HOT AIR / WATER AND GASES REQUIRING MODE RATE OIL RESISTANCE.
2	NPR15050	1.5+/-0.1	50 +/- 5	PLAIN	BLACK	
3	NPR14065	1.4+/-0.1	65 +/- 5	PLAIN	BLACK	
4	NPR13550	1.35+/-0.1	50 +/- 5	PLAIN	BLACK	

NOTE : NORMAL TEMP. RANGE FOR THE ABOVE RUBBER SHEETS IS (-20°C TO +90°C)

PRODUCT LIST FOR NITRILE & PVC/NBR RUBBER SHEETS

SR. NO.	PRODUCT CODE	SPECIFIC GRAVITY	HARDNESS SHORE-A (O)	QUALITY	COLOR	PROPERTIES AND APPLICATION
1	NBR15060	1.5+/-0.1	60 +/- 5	PLAIN	BLACK	THESE TYPES OF RUBBER SHEETS HAVE HIGH RESISTANC TO MINERAL OILS, SOLVENTS, AND GASES LIKE L.P.G. THEY ARE ALSO SWELL RESISTANT HENCE FINDS APPLICATIONS AS GASKETS, O-RINGS, SEALS, DIAPHRAGMS, PADSTUBES AND HOSES.
2	NBR14070	1.4+/-0.1	70 +/- 5	PLAIN	BLACK	
3	NBR13065	1.3+/-0.1	65 +/- 5	PLAIN	BLACK	
4	DFMR 13070	1.3+/-0.1	70 +/- 5	PLAIN OR NYLON PLY	BLACK	
5	DFMR12060	1.2+/-0.1	60 +/- 5	PLAIN OR NYLON PLY	BLACK	
6	PVNBR12565	1.25+/-0.1	65 +/- 5	PLAIN	BLACK	
7	PVNBR12080	1.2+/-0.1	80 +/- 5	PLAIN	BLACK	

NOTE : NORMAL TEMP. RANGE FOR THE ABOVE RUBBER SHEETS IS (-20°C TO +110°C)

PRODUCT LIST FOR NEOPRENE RUBBER SHEETS

SR. NO.	PRODUCT CODE	SPECIFIC GRAVITY	HARDNESS SHORE-A (°)	QUALITY	COLOR	PROPERTIES AND APPLICATION
1	NPR15070	1.5+/-0.1	70 +/- 5	PLAIN	BLACK	THESE TYPES OF SHEETS ARE RESISTANT TO COLD MINERAL OILS, ACIDS AND AGEING. HENCE FINDS USE AS ANTI-VIBRATION STRIPS / PADS, WEAR AND MOUNTING PADS, SEALING GASKETS/PACKINGS FOR HOT AIR / WATER AND GASES REQUIRING MODE- RATE OIL RESISTANCE.
2	NPR15050	1.5+/-0.1	50 +/- 5	PLAIN	BLACK	
3	NPR14065	1.4+/-0.1	65 +/- 5	PLAIN	BLACK	
4	NPR13550	1.35+7- 0.1	50 +/- 5	PLAIN	BLACK	

NOTE : NORMAL TEMP. RANGE FOR THE ABOVE RUBBER SHEETS IS (-20°C TO +90°C)

PRODUCT LIST FOR EPDM RUBBER SHEETS

SR. NO.	PRODUCT CODE	SPECIFIC GRAVITY	HARDNESS SHORE-A (O)	QUALITY	COLOR	PROPERTIES AND APPLICATION
1	EP13565	1.35+7- 0.1	65 +7- 5	PLAIN	BLACK	THESE TYPES OF SHEETS ARE RESISTANT TO WATER SEEPAGE, WEATHER, TEMPERATURE AND SUNLIGHT. HENCE USED AS WATER PROOFING LININGS AND SEALINGS, ON ROOFS, IN SWIMMING POOLS, WATER TANKS, TERRACE GARDENS, CANALS AND AS UNDER- GROUND SEEPAGE RESIS-TANT LININGS.
2	EP13065	1.3+/-0.1	65 +7- 5	PLAIN	BLACK	
3	EP 12665	1.25+7- 0.1	65 +7- 5	PLAIN	BLACK	
4	EP12065	1.2+7-0.1	65 +7- 5	PLAIN	BLACK	
5	EP12060	1.2+7-0.1	60 +7- 5	PLAIN	BLACK	
6	EP11560	1.15+7-0.1	60 +7- 5	PLAIN	BLACK	

NOTE : NORMAL TEMP. RANGE FOR THE ABOVE RUBBER SHEETS IS (-35°C TO +135°C)

PRODUCT LIST FOR SPECIAL RUBBER SHEETS

SR. NO.	PRODUCT CODE	SPECIFIC GRAVITY	HARDNESS SHORE-A (°)	QUALITY	COLOR	PROPERTIES AND APPLICATION
1	HPNR14070 HYPALON	1.4+/-0.1	70 +/- 5	PLAIN	BLACK	USED IN APPLICATIONS OF HIGH RESISTANCE TO TEMPERATURE, WEATHER, OILS, ABRASION AND MOST CHEMICALS.
2	HPNR 14065 HYPALON	1.4+/-0.1	65+7-5	PLAIN	BLACK	
3	FGNBR14060 FOODGRADE	1.4+/-0.1	60 +/- 5	PLAIN	WHITE	SUITABLE FOR CONTACTS WITH FOODGRADE PRODUCTS.
4	FGEP13065 FOODGRADE	1.3+/-0.1	65 +/- 5	PLAIN	WHITE	USED AS GASKETS, WASHERS, IN FOOD PRODUCTS MACHINERY.
5	EIM30K15065 ELECTRICAL INSULATION	1.5+/-0.1	65 +/- 5	PLAIN	GREY BLACK	HAS HIGH VOLTAGE INSULATING PROPERTIES. USED AS FLOORMATS IN HIGH VOLTAGE AREA.
6	EIM60K16070 ELECTRICAL INSULATION	1.6+/-0.1	70 +/- 5	PLAIN	GREY BLACK	
7	SCNR15065 SILICONE	1.5+/-0.1	65 +/- 5	PLAIN	WHITE RED	HAS HIGH DIELECTRIC STRENGTH AND LOW PERMEABILITY TO GAS AND AIR APPLICATIONS. REQUIRING RESISTANCE TO HEAT, WEATHER, OZONE, CHEMICALS.
8	SCNR13070 SILICONE	1.3+/-0.1	70 +/- 5	PLAIN	WHITE RED	
9	SCNR12560 SILICONE	1.25+7-0.1	60 +/- 5	PLAIN	WHITE RED	

NOTE : NORMAL TEMP. RANGE FOR THE ABOVE RUBBER SHEETS IS (-40°C TO +180°C)



Tirupati

Mfg. by : TIRUPATI PLASTIC INDUSTRIES

(A Little More Makes A Big Difference.)

“Tirupati” polymers sheets are manufactured on state of the art technology based sheets extrusion line of the world renowned “AMUT”, Italy. The quality of Tirupati polymers sheets therefore match to international standards.

“Tirupati” sheets are made out of speciality for formulated prime virgin raw materials with the combination of broad colour range, excellent surface finish, customised dimensions and uncompromising quality adhering to all industrial specifications, naturally it becomes the choice of all leading consultants.

“Tirupati - H”

Homopolymer polypropylene sheets (P.P.H.)

A tough material with excellent fatigue resistance, chemical resistance and electrical insulation properties. The sheets can be cut, bent or welded using simple techniques.

Thickness : 1mm to 12 mm

Size : 1220/1000 mm x 2000 mm

Colours : Natural, Grey, etc.

Uses : construction material for storage containers for textiles, sugar, pharmaceuticals, organic & other industries. Cutting pads, clicking boards, chopping boards.

“Tirupati - C”

Copolymer polypropylene sheets (P.P.C.P.)

It is a copolymer which improves the impact strength of the sheet. They have better impact strength than homopolymer. The impact strength can be retained at low temperature. They have excellent hinge property and are tear resistant.

Thickness : 0.65 mm to 30 mm

Size : 1220/1000 mm x 2000 mm

Colours : Natural, Grey and all other colours.

Uses : Files, folders, computer files, video cassette covers, artificial limbs, industrial tanks, vessels.

“Tirupati”

High Impact Polystyrene sheets (H.I.P.S.)

These sheets contain some amount of rubber which improves the impact strength. The sheets are ideally used for thermoforming / vacuum forming.

Thickness : 0.65 mm to 10 mm

Size : Width x Length customized

Colours : natural, ice blue, light beige & various other colours

Uses : refrigerator body/door liner, bathroom cabinets, disposable containers, vending machine cups, dairy product packaging, industrial items, automobile industry-seats, back cover, hand-rest, cable jointing trays, sanitaryware, glow signs, etc.

“Tirupati - A.B.S.”

Acrylonitrile butadiene styrene sheets (A.B.S.)

These sheets contain rubber and hence possess excellent toughness and impact strength. The sheets are rigid and abrasion resistant, manufactured in various embossed designs and colours with high gloss, Ideal for thermoforming/ vacuum forming.

Thickness : 0.65 mm to 10 mm

Size : Width x Length customized

Colours : various

Uses : refrigerator liners, luggage & attache case shells, chair back covers, seats, auto accessories, machine housing, industrial items, sanitaryware, novelty items, etc.

“Tirupati - GFRP”

Polypropylene Glass lined Sheets. (P.P.G.L.)

Generally manufactured in roll form and in thickness of 2 mm, 2.75 mm, 3 mm, 4 mm, 5 mm & 6 mm. Std. width 1.25 mtrs. and Std. Length 10 mtrs.

The sheets are used for lining and fabrication of tanks, vessels and all types of other chemical process equipments where strong reinforcement is necessary.

“Tirupati”

High density polyethylene sheets (H.D.P.E.)

These sheets are similar to polypropylene in performance with better impact strength and punchability. The characteristic properties are low density, high toughness and elongation at break, very good electrical and dielectrical properties, very low water absorption, high chemical resistance, high resistance to stress cracking, good processing and machining properties.

Thickness : 0.65 mm to 25 mm

Size : 1220/1000 mm x 2000 mm

Colours : Natural, Black. Other on request

Uses : Storage tanks, industrial containers, fish boxes, cardcans, chopping board, crates partition and luggage liners.

“Tirupati”

Low Density Polyethylene Sheets (L.D.P.E.)

These sheets possess good electrical and insulating properties, excellent flexibility.

Thickness : 0.65 mm to 12 mm

Size : 1220/1000 mm x 2000 mm

Colours : Natural, & other eye catching colours.

Uses : cables, overwrap, pipe overwrap, protective gear sealses & gaskets, stationery items, soft luggage.

Tirupati

Sheet-Technical Specifications

	ASTM. STD.	P.P. (Polypropylene sheet)	H.D.P.E. (High density Polyethylene sheet)
1. Specific gravity (g/cc)	D 792	0.900-0.910	0.941-0.966
2. Water absorption (%) 24 hrs 3.3 mm thick specimen	D 570	<0.01	<0.01
3. Hardness shore	-	71	60-70
4. Heat distortion temp (°C) at 66 psi	D 648	99-100	60-85
5. Tensile strength (kg/cm ²)	D 638	302-401	218-387
6. Elongation at break (%)	D 651	50-600	50-600
7. Flexural strength (kg/cm ²)	D 790	-	141-211
8. Impact strength (Izod ft lb/in notch)	D 256	0.6-6.0	1.5-12
9. Dielectric strength volts/mil short time 3.2 mm thick specimen (Ohm.cm)	D 149	> 800	> 800

Test Certificate :

Our “Tirupati” Polymer sheets are tested by National Test House, Mumbai and T.C, can be provided along with supply.

Quality control :

Tirupati plastic observe stringent quality standards at their plant to manufacture these high performance plastic sheets. After all, these plastic sheets form an integral part of high value products.

THANAWALA & CO.

Mfg. by: Cotton & Synthetic Rops, Cordages, Tapes, Webbing etc.

- 1) Nylon Mountaineering Ropes Braided / Kermantle Type i sizes from 8mm dia. onwards for Climbing and Rappelling, River Crossing, Glass Cleaning & Safety equipments.
- 2) Nylon / Synthetic Woven Tapes / Webbing in width from 8-100mm and thickness from 0.5 mm to 6 mm used for Parachutes, Harness, Slings, Rucksacks, Tents & Safety Equipments.
- 3) Nylon / Polyester Ropes Twisted / Hawser Laid [2 STRAND] in sizes from 2mm to 26mm Dia. As Per IS specifications for Marine & Safety Applications.
- 4) Nylon / Polyester / Kevlar / Spectra [Dyneema] Braided cords from 1 to 50 mm Diameter for multiple uses like Parachute Rigging Lines, Tow / Winch lines, Aero sports, Sailing Lines, Lifelines, Life Raft / Gemini Boat Lines, Shoe Laces etc.



Mfg. by : NOBLE POLYMERS

- HDPE Pipes as per IS-4984 / 1995 in PE-63 as well as PE-80 grades. Also as per ISO-4427. Sprinkler irrigation system as per IS-14151 (Pt-1).
- P.P. Pipes as per DIN-8077/8078.
- HDPE & P.P. Pipe Fittings such as Bend, Tee, Flanges, Pipe-ends, Reducers, End-caps etc.
- Range - 20mm to 355mm O.D.
- HDPE Pipes (with ISI mark) are generally available in black colour and in std. length of 5mtrs. Pipes upto 110mm size can also be supplied in coil form
- P. P. Pipes are generally available in grey colour and in std. length of 5mtrs. On request, pipes in Natural colour and length 5/6 mtrs can also be provided. **
- Supply No Tax / No Forms Basis
- Best quality, competitive prices and prompt services.



Nylon Rods

Mfg. by : Garware Synthetics Ltd.

APPLICATIONS :

Some commercial applications of Garflon can be given industrwise, as under :

ENGINEERING :

Gears, cams, sprockets, bushes, bearings, gaskets, pulleys, liners.

TEXTILE :

Loom pivot bearings, gears for loom and knitting machines, shuttles, rollers, cams and cam followers.

METAL :

Bearings, bearing cages slipper pads, gears, bushes, wear strips, rollers, eccentric rollers, wobble box inserts

MATERIAL HANDLING EQUIPMENTS : Cranes / Form lifts / Conveyors, Ropeways

AUTOMOBILE :

Wear rings, pads, swivel bushes, throttle linkages, bushes, shackle pin bushes.

MARINE : Bushes, Gears, rings, trunnion bearings rollers and roller bearings, stern tubes.

PAPER / SUGAR MILL :

Gears, bushes, pulleys, rollers, bearings.

BOTTLING & FOOD PROCESSING :

Starwheels, scrolls, guides, cams, cam followers, rollers, timing screws.

RAILWAYS : Bushes, wear plates.

CHEMICAL : Balls, gaskets, liners, nuts & bolts.



Mfg. by : Thermal Papers Pvt. Ltd

High Density

Arc & Heat Resistant

Asbestos Cement Boards

FOR ELECTRICAL & THERMAL INSULATION

DESCRIPTION :

THERMOSIL High Density Arc and Heat Resistant Boards are manufactured from carefully selected and treated Raw Asbestos Fibres and special grades of Cement. The particular properties of the material are obtained by maintaining precision control of the blend, rate of mixing, addition of predetermined quantities of water and chemicals and then compressing the mix into sheet form under extremely high pressure. The sheets are then kept for maturing for several weeks under conditions of controlled humidity and temperature.

APPLCATION :

The distinctive properties of **THERMOSIL High Density Boards** lead to their application in numerous diverse areas. Some of these applications are :

- As Arc chutes and deflector plates on air-break circuit breakers, contactors and fuse gear
- As spacer strips and end packing blocks in distribution transformers
- For the control and extinction of electric arcs
- For handling and transferring hot glass components in the moulding area, conveyor systems and annealing lehrs
- For manufacture of jigs, dies, moulds, guides, buffer, strips, tubes, rods and other machined components
- For insulation of coils, as top plate or support block in induction furnaces
- As guide strips or splash boards in handling of molten metals on hot castings
- For transportation of hot metal and pot line insulation in the aluminium industry
- As fire barriers or fire check doors

Mfg. by : Thermal Papers Pvt. Ltd

Asbestos Mill Board

PRODUCT CHARACTERISTICS

- is made from a blend of high quality Canadian Chrysotile Asbestos fibres and other incombustible inorganic ingredients
- is compacity bound
- is strong with a smooth surface
- is available in low thicknesses
- has rigidity as well as flexibility
- has low thermal conductivity
- has high temperature resistivity
- can be easily cut, punched or wet moulded
- gives clean edges while cutting gaskets

AVAILABLE GRADES

- Grade TS-101/NE-1001
general purpose grades for high temperature insulation, (both grades have similar properties)
- Grade TS-301
Superior grade for specialised application e.g. automobile gaskets, sheet glass roller conveyors, padding in the steel strip industry etc.
- Grade AI-111
single lamination millboard made on a new Fourdrinier machine.
- Grade AI-333

Superior grade of single lamination milliboard for automobile gaskets-available in rolls or sheets.

APPLICATIONS :

- a versatile material used for widely divergent applications

For Insulation :

- in Electric Arc, Induction and other Furnaces
- in Boilers and Ovens
- in Kerosene Wick Stoves
- in Electrical Appliances like Domestic Presses
- in Steam and Hot Air Pipelines and Ductings

For Automobile Gaskets :

- in cylinder Head and Exhaust Manifold Gaskets

For Padding :

in Ball Mills

- in Expansion Joints
- in Steel Strip Industry

For Construction of Roller conveyors :

- in Sheet Glass Industry
- in Fire-check Doors For

Environmental Safety :

- as Covers for Ladles, Pots, Ingots, etc. protect workmen
- as Base Mat for placing Hot Metals

For Protection of Plant and Equipment:

- as Gasket while pouring Molten Metals in Steel & Aluminium Industries
- as Lining below the Mould in the Casting Industry

SILICONE HOSE PIPE & PTFE FIBRE GLASS CLOTH TAPER & BELT.

DOUBLE PLY FIBREGLASS-SILICONE COATED HOSE PIPE

APPLICATIONS : Plastics Machinery Drying, (Dehumidified Air Dryer, Hopper Dryer, Lamination, Multi Layer film, IBC System Converting, Printing, Plastic Auxiliary Machinery) Direct heaters, Automotive, Vehicle Exhaust, Tiles & Ceramic Machinery, Air Craft, Air Conditioning, Hot Air Conveying System & All Industrial & High/Low temperature.

FEATURES : Double ply silicone coated Hose Pipe. The standard Hose Pipe for high temperature airflow and fume removal. The internal ply provides a smoother bore for maximum air flow, less friction loss. UV and weather resistant.

SPECIFICATION :

Sizes	: 1" -14" ID (25mm to 355mm)	Temp. Range	: -75° to 1200° F & above
Std. Length	: 5 Mtrs (standard)	Options	: Size as per your requirement.
Color	: Red		

SINGLE PLY FIBREGLASS-SILICONE COATED HOSE PIPE

APPLICATIONS : Plastics Machinery Drying, (Dehumidified Air Dryer, Hopper Dryer, Lamination, Multi Layer film, Converting, Printing) Ventilation, Computer Cooling, Direct heaters, Automotive, Vehicle Exhaust, Tiles & Ceramic Machinery, Air Craft, Air Conditioning, Hot Air Conveying System & All Industrial & High/Low temperature.

FEATURES : Single ply silicone coated Hose Pipe. The standard Hose Pipe for high temperature airflow and fume removal. UV and weather resistant.

SPECIFICATION :

Sizes	: 1" -14" ID (25mm to 355mm)	Temp. Range	: -75° to 1200° F & above
Std. Length	: 5 Mtrs (standard)	Options	: Size as per your requirement.
Color	: Red		

ADVANTAGES

Light Weight • Size Flexibility • Maximum Durability • Maximum Safety • Dimensionally Stability.

ENGINEERING PLASTICS

PTFE/Teflon, Nylon-6, Cast Nylon, Delrin (Acetol), Poly Propylene, P.V.C., HDPE, Rod, BUSH, SHEET, PIPES & TUBES, PROFILES, WELDING RODS, COMPONENTS

PRODUCTS & PROPERTIES OF ENGINEERING PLASTIC

	ASTM	PTFE	UHMV-PE	NYLON 6	CAST NYLON	ACETAL	PP	HDPE	PVC
Specific gravity	D792	2-14-2.20	0.93	1.12-1.14	1.15-1.17	1.41	0.902-0.910	0.941-0.965	1.30-1.5
p.s.i. Tensile Strength	D638	2000-5000	2500-3500	11800-10000	11000-14000	8800	4300-5500	3100-5500	6000-7500
% Elongation	D638	200.0-400.0	500	100-300"	30-320	40-75	200.0-700.0	20-1300	40-80
p.s.i. Comprehensive strength	D695	1700	2400	13000	-	16000 (10% defl.)	5500-8000	2700-3600	8000-13000
Impact strength (14x>2 in. notched)	D256	3.0	No Break	10"-3.0"	0.8-2.0 (½X½ inbar)	1.0-1.5 (½X½ inbar)	0.5-2.2at (½X½ inbar)	0.5-20.0	0.4-20.0
Hardness Rockwell	D785	D50-D55 (Shore)	D60-D70 (Shore)	R119	R95-R120	M78-M80	80-110	D60-D70 (Shore)	65-85 (Shore)
10' p.s.i. 73° F Flexural Modulus	D790	-	1.30-1.40	3.9"-1.4"	1.1-4.5" 0.8-1.6"	3.75	1.7-2.5	1.0-2.6	3-5
Coefficient of friction	-	0.04 0.1	0.03 0.08	0.37	0.35	0.18	0.3	0.08 0.18	0.45
-10" cal sec cm ² C cm Thermal conductivity	C177	6.0	11-12.4	5.8		5.5	2.8	11.0-12.4	3.5-5.0
Thermal Expansion 10' Per°C	D696	10.0	7.2	8.3	9.0	8.5	5.8-10.2	11.0-13.0	5.0-10.0
Resistance to heat °C (continuous)		260°C	120°C	80°C 120°C	121°C 149°C	80°C 120°C	110°C	80°C	65°C 75°C
Ω-cm(23°C50%) Volume resistivity	D257	10 ¹⁸	10 ¹⁶	10 ¹¹ -10 ¹⁴	-	10x10"	10 ¹⁶	10 ¹⁶	10 ¹⁶
1/8 in thickness Volts mil Dielectric Strength	D149	480	710	400	300-400	500(90mil)	500-660	450-500	350-500
1 KHz Dielectric Constant	D150	2.1	2.25-2.35	3.7	3.7	3.7	2.2-2.6	2.30-2.35	3.0-3.8
1KHz Dissipation (Power) factor	D150	0.0002	0.00021	0.02	0.02	0.0010 (40mil)	0.0005 -0.0018	0.0005	0.009-0.017
24j 3.2 mm% Water absorption 24hr. 3.2 thickness, %	D570	0.00	0.01	1.3-1.9	0.6-1.2	0.22	0.01-0.03	0.01	0.04-0.4
In min Burning rate	D635	—	—	—	—	1.0-1.1	0.75-0.82	1.00-1.04	-
Effect of Weak acids	D543	NONE	Very resistant	Resistant	Resistant	Resistant to some	NONE	Resistant	NONE
Effect of Strong acids	D543	NONE	Attacked slowly by Oxidizing acids	Attacked	Attacked	Attacked	Attacked slowly by Oxidizing acids	Attacked slowly by Oxidizing acids	NONE
Effect of Weak Alkalies	D543	NONE	Very resistant	NONE	NONE	Attacked	NONE	Very resistant	NONE
Effect of Strong Alkalies	D543	NONE	Very resistant	resistant	resistant	Attacked	resistant	Very resistant	NONE Resists
Effect of Organic Solvents	D543	NONE	Resistant Below 80°C	Resistant to common solvents	Resistant to common solvents	Excellent resistant to practically All solvents	Resistant Below 80°C	Resistant Below 80°C	Alcohols, aliphatic hydrocarbons and oils. Soluble in ketones and esters swells In aromatic hydrocarbons.

WEIGHT CHART FOR ROUND RODS

POLYACETAL (Delrin)		H.D.P.E.		POLYPROPYLENE (H.P.C.P.)		NYLON-6		Size in inches	Size in mm	Sl. No.
Wt in Kgf	Wt in kg/mtr	Wt in Kgf	Wt in kg/mtr	Wt in Kgf	Wt in kg/mtr	Wt in Kgf	Wt in kg/mtr			
0.060	0.018	0.030	0.009	0.030	0.009	0.040	0.012	1/4"	6	1
0.100	0.030	0.050	0.015	0.050	0.015	0.060	0.018	5/16"	8	2
0.130	0.039	0.077	0.023	0.080	0.024	0.090	0.027	3/8"	10	3
0.210	0.063	0.100	0.030	0.100	0.030	0.133	0.040	1/2"	12	4
0.320	0.096	0.200	0.060	0.200	0.060	0.250	0.075	5/8"	16	5
0.460	0.138	0.300	0.090	0.300	0.090	0.380	0.116	3/4"	19	6
0.640	0.192	0.400	0.120	0.410	0.123	0.510	0.152	7/8"	22	7
0.850	0.255	0.536	0.161	0.540	0.162	0.652	0.200	1"	25	8
1.030	0.309	0.673	0.202	0.680	0.204	0.802	0.242	1 1/8"	29	9
1.280	0.384	0.766	0.230	0.800	0.240	1.000	0.302	1 1/4"	32	10
1.520	0.456	1.012	0.304	1.020	0.306	1.150	0.350	1 3/8"	35	11
1.850	0.556	1.066	0.320	1.250	0.375	1.400	0.420	1 1/2"	38	12
2.310	0.694	1.365	0.410	1.400	0.420	1.700	0.500	1 5/8"	41	13
2.520	0.766	1.548	0.465	1.600	0.480	1.970	0.600	1 3/4"	44	14
3.350	1.006	2.065	0.620	2.150	0.646	2.300	0.725	2"	51	15
4.250	1.276	2.498	0.750	2.600	0.781	3.165	0.965	2 1/4"	57	16
5.000	1.502	3.064	0.920	3.200	0.961	4.110	1.145	2 1/2"	64	17
6.200	1.862	3.883	1.166	4.090	1.228	4.850	1.425	2 3/4"	70	18
6.750	2.027	4.295	1.380	4.700	1.411	5.650	1.650	3"	76	19
8.400	2.523	5.162	1.550	5.400	1.622	6.300	1.875	3 1/4"	83	20
10.400	3.123	6.961	1.790	6.150	1.847	7.400	2.200	3 1/2"	89	21
11.020	3.309	6.693	2.010	7.020	2.108	8.200	2.520	3 3/4"	95	22
11.800	3.544	7.256	2.320	7.920	2.378	9.800	2.900	4"	102	23
13.650	4.099	8.598	2.582	8.950	2.688	10.500	3.150	4 1/4"	108	24
16.500	4.955	9.324	2.800	10.100	3.033	12.700	3.700	4 1/2"	114	25
17.300	5.195	10.289	3.180	11.020	3.309	14.083	4.252	4 3/4"	121	26
18.860	5.664	12.254	3.680	12.400	3.724	15.000	4.500	5"	127	27
22.360	6.715	14.086	4.230	14.420	4.330	18.200	5.200	5 1/2"	140	28
28.200	8.259	17.249	5.180	17.600	5.285	21.250	6.500	6"	152	29
-	-	20.013	6.010	20.120	6.042	26.000	7.800	6 1/2"	165	30
-	-	23.510	7.060	23.880	7.171	29.500	8.800	7"	178	31
-	-	26.707	8.020	27.120	8.144	34.500	10.420	7 1/2"	191	32
-	-	30.902	9.280	31.200	9.369	38.500	11.600	8"	203	33
-	-	32.834	9.860	33.100	9.940	44.200	13.260	8 1/2"	216	34
-	-	36.831	10.760	36.000	10.811	48.290	14.200	9"	229	35
-	-	47.722	14.340	49.000	14.715	60.840	18.270	10"	254	36

WEIGHT CHART FOR SQUARE RODS

POLYACETAL (Delrin)		H.D.P.E.		POLYPROPYLENE (H.P.C.P.)		NYLON-6		Size in inches	Size in mm	Sl. No.
Wt in Kgf	Wt in kg/mtr	Wt in Kgf	Wt in kg/mtr	Wt in Kgf	Wt in kg/mtr	Wt in Kgf	Wt in kg/mtr			
0.583	0.175	0.233	0.070	0.250	0.075	0.333	0.100	5/8" x 5/8"	16x16	1
0.699	0.210	0.400	0.120	0.403	0.121	0.500	0.150	3/4" x 3/4"	20 x 20	2
1.166	0.350	0.733	0.220	0.766	0.230	0.922	0.280	1"x1"	25x25	3
1.832	0.550	1.199	0.360	1.249	0.375	1.399	0.420	1 1/4" x 1 1/4"	32x32	4
2.664	0.800	1.582	0.475	1.662	0.500	1.998	0.600	1 1/2" x 1 1/2"	38x38	5
4.496	1.350	2.731	0.820	2.797	0.840	3.497	1.020	2" x 2"	50 x 50	6
4.995	1.500	4.163	1.250	4.239	1.300	4.995	1.500	2 1/2" x 2 1/2"	63x63	7
8.991	2.700	6.828	1.750	6.961	1.790	7.160	2.150	3" x 3"	75 x 75	8
-	-	9.324	2.800	9.224	2.860	12.488	3.750	4"x4"	100x100	9



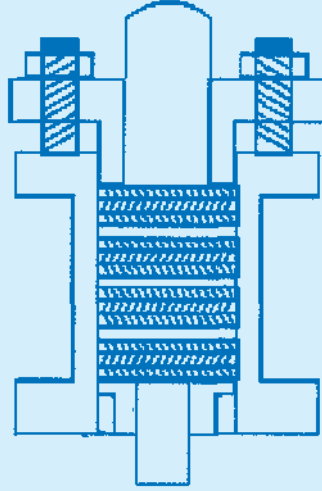
“NATRAJ”

- * White Rubber Insertion Sheet
- * Natural
- * Neoprene
- * EPDM
- * SBR
- * Nitrile & Silicon Calender Finish Rubber Sheet & Profile.
(upto 4'width & continous length)

“BORON”

- * Natural
- * E.P.D.M.
- * SBR
- * Nitrile
- * Neoprene
- * Electrical & Anti Skid Rubber Sheet
- * Moulded Rubber Sheet
(up to 2 mtr. width & continous length)

Information supplied in this catalogue is based on general experience and is given in good faith, but because of the many particular factors which are outside our knowledge and control and affect the sue of products, no warranty is or is to be implied with respect to



SPITMAAN

dt Deeva Traders

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PERFECT INDUSTRIAL PRODUCTS
KRISHNA TRADING CO.