Textile Technologies Europe Ltd Gland Packing

Textile Technologies Europe Ltd offer an extensive range of Gland Packing designed and constructed to minimise maintenance costs. Our philosophy is to offer the most suitable packing for each application from the wide selection available, using the most advanced packing fibres, the highest quality braiding methods and the best lubrication processes.

The actual cost of a Gland Packing is often less than 3% of the cost of utilisation when compared to the total cost of plant downtime, equipment wear, product or fluid loss, labour and gland maintenance.

It is therefore of paramount importance when specifying a Gland Packing to choose from the best modern packing fibres available, using the most advanced and durable, square inter-braided construction. Combining this quality with extensive stock holdings and experienced technical advice, completes the Textile Technologies Europe Ltd Gland Packing service.

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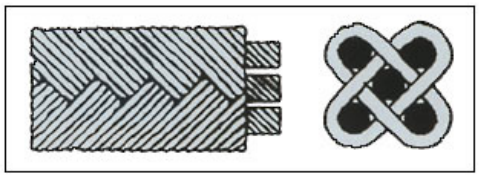
Packing Construction

All square-braided Textile Technologies Europe Ltd Gland Packing is made from the most advanced specification braiding machines available. 24 and 36 track braiders are used to produce 4-ply, square inter-braided packing for all sizes from 3/8” (10mm) upwards.

Fibres are run from the core of the packing section to the corner posts and surfaces, whilst being cross-locked in a square, lattice construction, to produce maximum resilience and highly dense square packing.

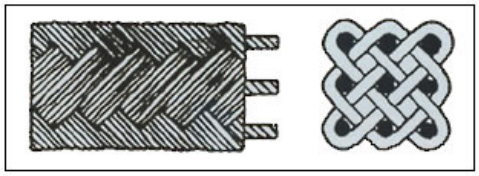
Braiding quality significantly affects the working lifetime of Gland Packing. Packing produced using outdated braiding machines lack the strength of a true cross-lock construction, are less dense and not as square in cross section. The looser the braiding, the lower the packing’s durability. Additionally, greater gland pressure is then required to perform a seal, resulting in increased mechanical stress. As the packing deteriorates, more frequent gland adjustments are required, causing even more mechanical stress, which leads to accelerated failure.

Textile Technologies Europe Ltd’s Gland Packings have a high degree of resilience and consistency of volume. Their superior lattice, square inter-braided construction needs less gland pressure to seal, resulting in reduced equipment wear, less gland maintenance and increased packing life.



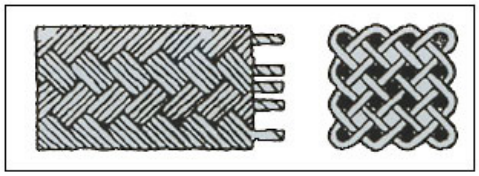
2 Diagonals

Section 1/8” x 1/8”	8 Spindles
Section 3/16” x 3/16”	8 Spindles



3 Diagonals

Section 1/4” x 1/4”	12 Spindles
Section 5/16” x 5/16”	15 Spindles



4 Diagonals

Section 3/8” x 3/8”	24 Spindles
Section 7/16” x 7/16”	24 Spindles
Section 1/2” x 1/2”	24 Spindles
Section 9/16” x 9/16”	24 Spindles
Section 5/8” x 5/8”	36 Spindles

Important: Information on the above characteristics is based upon tests we believe to be reliable. The values given are typical values that vary according to application conditions. The values are intended only as a source of information and are given without guarantee and do not constitute a warranty. It should be noted that the substrate test materials are generic and actual results may vary from those given above. Purchasers should independently determine prior to use the suitability of this material for their specific purposes. All Textile Technologies Europe Ltd materials described herein are sold subject to Textile Technologies Europe Ltd conditions of sale, a copy of which is available on request.

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Gland Packing Installation Instructions

How To Determine The Correct Cross Section Of Gland Packing

It is very important to choose the correct size of packing to form an effective seal. Firstly:

1. Measure the diameter of the shaft.
2. Measure the ID of the Gland or Stuffing box.
3. Subtract the shaft diameter from the Gland ID, then divide by 2.

E.g. (Gland ID (50mm) - Shaft Diameter (25mm) ÷ 2 = 12.50mm (1/2”) cross section.

Preparation of Gland or Stuffing Box

It is very important to prepare the stuffing box to form an effective seal. Firstly:

1. Shut down the unit or pump.
2. Remove any used Gland Packing without damaging the shaft or housing, using a packing extractor.

IMPORTANT - Even a small piece of used Gland Packing will greatly reduce the efficiency of a new packing.

3. Count the number of Gland Packing rings (Where appropriate, remove the lantern ring used pullers and then count the number of rings below the lantern ring).
4. Clean the shaft and stuffing box removing any evidence of; scale, rust, dirt etc. Remember, the cleaner the stuffing box, the better for re-packing. Check, preferably by hand / touch, for any signs of damage i.e. Shaft wear, scoring grooves etc.
5. Spray or wipe the shaft an gland with a silicone grease.

Installation Of Gland Packing From A Length Form

1. The exact length of required material is cut from the coil. Spirally wrap the material around a rod of the exact diameter to the pump shaft to be sealed.
2. Cut the required number of rings (cleanly to obtain good square joints) by making a straight cut along the shaft. When removing the rings from the rod, do so, by slipping them off without opening the rings.
3. Place the first ring over the shaft by opening to an ‘S’ shape, to ensure that any bending effects are spread over the whole ring and that there is no deformation of the cross section.
4. Partially enter both ends of the first ring together into the stuffing box before inserting the remainder of the rings and then lightly bed into the bottom of the stuffing box.
5. Repeat steps 1 & 2 with the remaining number of rings ensuring that each ring is firmly seated and that the joints are staggered by a minimum of 90 degrees (Where appropriate, ensure the lantern ring is correctly positioned).

IMPORTANT - Failure to position the rings at alternating 90 degree angles will result in a leak path forming and thus, failure of the system. It is also vitally important that each ring is fitted individually and not as a full set. Ensure that he shaft turns freely after fitting each individual ring.

6. When the correct number of rings have been fitted, tighten the Gland nuts until is lightly gripped. Then tighten the Gland nuts by hand, only. Again, check that the Gland turns freely.

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Start-Up And Break In Of The Gland

The purpose of the Gland Packing is to control leakage, not prevent it. There must be a level of leakage for the Gland Packing to perform properly otherwise, failure will occur. Firstly:

1. Reconnect and Gland and/or Pump flushing arrangements and start-up the pump. Allow 10 - 15 minutes of generous leakage, as this will increase the Gland Packing life.
2. Begin to tighten the nuts gradually by one sixth of a turn. Continue to tighten, by one sixth of a turn, at 10 minute intervals until leakage has been reduced to an acceptable level.

IMPORTANT - Do not over-tighten.

3. The ideal leakage rate is reached when any subsequent tightening of the Gland nuts causes an heat build-up (usually within 45 - 60 minutes).
4. Occasionally re-check the Gland Packing for any signs of excessive leakage, heat build-up and/or other failure mechanisms. Readjust the Gland Packings as necessary.

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Preferred Range Of Optimum Performance Packing

= Valves
= Pumps & Mixers
= Reciprocating Rods
= Stern Tubes

Style	Material Description	Temperature	pH Range	Product Detail	Best Recommended Application Are In Red		
TP2	PTFE Graphite G1 Fibre	**-328°F +530°F -200°C +280°C**	0 - 14	The Preferred, optimum cost / performance, process & pump packing.	Pressure 435 psi Speed 5000 fpm	Pressure 870 psi Speed 400 fpm	Pressure 1740 psi Speed 300 fpm
TP1	100% GORE Fibre Packing	**-328°F +530°F -200°C +280°C**	0 - 14	Process & Chemical pump packing, 100% GORE G1 fibre.	Pressure 435 psi Speed 5000 fpm	Pressure 870 psi Speed 400 fpm	Pressure 1740 psi Speed 300 fpm
TT2	P.A.N. Fibres, PTFE Dispersion	**-40°F +500°F -200°C +250°C**	2 - 14	The Preferred, low, general plant pump packing.	Pressure 435 psi Speed 3500 fpm	Pressure 870 psi Speed 400 fpm	Pressure 1450 psi Speed 300 fpm
TG2	P.A.N. Fibres, Graphite Dispersion	**-60°F +482°F -50°C +250°C**	4 - 12	Graphite lubricated, lowest cost, synthetic fibre, general plant pump packing.	Pressure 290 psi Speed 2000 fpm	Pressure 580 psi Speed 600 fpm	Pressure 1160 psi Speed 200 fpm
TK4	Kevlar Aramid Fibres, Heavy PTFE Lubrication	**-150°F +536°F -100°C +280°C**	1 - 13	Optimum cost, lower wear, Aramid pump packing for abrasive media / arduous duties.	Pressure 580 psi Speed 4000 fpm	Pressure 1160 psi Speed 400 fpm	Pressure 2175 psi Speed 300 fpm
TM1	Special Aramidic Fibre, with PTFE	**-60°F +480°F -50°C +250°C**	2 - 12	Universal Paper / Sugar-Mill etc., white packing for demanding applications.	Pressure 725 psi Speed 4000 fpm	Pressure 1160 psi Speed 400 fpm	Pressure 1885 psi Speed 300 fpm
TK4B	Kevlar Aramid Fibres, PTFE Lubrication	**-150°F +530°F -100°C +280°C**	1 - 13	Kevlar, Aramid fibre, pump packing, for the most abrasive media / arduous duties.	Pressure 725 psi Speed 3000 fpm	Pressure 1450 psi Speed 600 fpm	Not Recommended
TR4	Expanded Graphite with Graphite Fibres	In Air = **850°F / 450°C** Inert = **1200 °C \ 650°C**	0 - 14	Preferred, Expanded Graphite, packing for rotary applications.	Pressure 580 psi Speed 6000 fpm	Pressure 290 psi Speed 400 fpm	Pressure 4350 psi Speed 200 fpm
TT9L	Pure PTFE Fibres with PTFE Lubrication	**-40°F +530°F -40°C +280°C**	0 - 14	100% Pure PTFE, general chemicals pump, pure white, packing.	Pressure 725 psi Speed 2400 fpm	Pressure 1450 psi Speed 400 fpm	Pressure 1740 psi Speed 200 fpm
TT5	PTFE Ramie Fibres	**-20°F +250°F -30°C +120°C**	2 - 12	Low cost, natural fibre packing, for general duty pumps.	Pressure 362.5 psi Speed 2400 fpm	Pressure 870 psi Speed 400 fpm	Pressure 1450 psi Speed 300 fpm
TR31	Expanded Graphite with Inconel Wire	In Air = **1100°F / 600°C** Inert = **5500 °C \ 3000°C**	0 - 14	The Preferred valve packing, especially for high temperature, high pressure applications.	Not Recommended	Not Recommended	Pressure 4350 psi Speed 100 fpm
TR3	Braided Expanded Graphite Packing	In Air = **1100°F / 600°C** Inert = **5500 °C \ 3000°C**	0 - 14	Preferred valve packing, for moderate pressure.	Pressure 290 psi Speed 5000 fpm	Pressure 290 psi Speed 400 fpm	Pressure 2175 psi Speed 200 fpm
TT9D	Fine Pure PTFE Fibres with PTFE Lubrication	**-325°F +530°F -200°C +280°C**	0 - 14	100% Pure PTFE, packing for all valves up to 250°C.	Pressure 580 psi Speed 1200 fpm	Pressure 2175 psi Speed 400 fpm	Pressure 2900 psi Speed 200 fpm
TT8	100% Unsintered PTFE & PTFE Tape	**-150°F +500°F -100°C +260°C**	0 - 14	Low cost, PTFE small valve packing.	Not Recommended	Not Recommended	Pressure 1450 psi Speed 200 fpm
TF4	PTFE Lubrication, Flax Yarns	**-20°F +250°F -30°C +120°C**	2 - 12	The most common packing used for marine stern tubes.	Pressure 290 psi Speed 2000 fpm	Pressure 725 psi Speed 400 fpm	Not Recommended
TT6	P.A.N. Fibres, PTFE Dispersion	**-40°F +482°F -40°C +250°C**	1 - 14	The industry standard, road tanker man-lid, braided packing.	STATIC TANKS ONLY		

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Premature Gland Packing Failure Modes

A used or worn set of packing can be of value as it often indicates causes of premature packing failure. Examine it carefully. The following table should assist when troubleshooting causes of packing problems.

INDICATION	FAILURE MECHANISM	ACTION
No leakage at start up.	Gland over tightened.	Back off gland to encourage initial leakage and lubrication. If negative suction, install lantern ring and connect to discharge.
Excessive leakage at start up.	Incorrect sizing or fitting of packing.	Check for correct packing size. Check if the rings were installed properly.
Leakage along outside of gland follower.	Packing improperly fitted.	Repack with care after checking shaft for wear.
Excessive leakage	Packing swollen or decomposed. Leakage through ring joints (rings cut too short or wrongly assembled) Washout of lubricants. Shaft eccentricity. Expansion of stuffing box.	Change to compatible packing. Replace with correct size of ring. Change to a packing which resists the action of the sealed fluid. Check shaft run-out. Examine shaft bearings. Checking stuffing material. Arrange cooling if box is liable to run hot.
Packing extruded into space between shaft and housing or gland follower.	Designed clearance excessive or part worn by abrasives or shaft bearings inadequate.	Reduce clearances, check bearings, apply bushings. May also be excessive gland pressure. Suggest use a combi packing.
Packing rings extruded into adjacent rings.	Rings cut too short.	Repack with accurately cut rings.
Rings disappear in set.	Packing entering the system.	Install bottom bushing or one ring of TK4B.
Packing rings flattened out on ID under the rod or shaft.	Worn bearings may be causing whip or run-out.	Check alignment of shaft and condition of bearings.
Used packing scored on outside surface, possible leakage along bore of box housing.	Packing rotating with shaft due to being undersized.	Check dimensions of housing and packing.
Packing rings near gland follower very compressed.	Packing fitted improperly.	Replace with care and check.
Bore of used packing charred or blackened, possibly shaft material adhering to packing	Lubrication failure.	Change packing to one of more suitable lubricants or material, or fit lantern ring with lubricant feed.
Shaft badly worn along its length.	Lubrication failure.	Change packing to one of more suitable lubricants or material, or fit lantern ring with lubricant feed.
Packing abraded.	Abrasives in fluid.	Fit filter. Flushing stuffing box with clean fluid.

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Gland Packings - Equivalents to Other Manufacturers

AESSEAL®	EQUIVALENT
210	TK4B
245	TK4
260	TK4T
270	TK5
274	TK5
310	TG4
330	TC5
340	TR4
345	TR4
350	TR3
355	TR31
360	TR2
370	TR1
405	TG8L
410	TG1D
415	TG1L
550	TT2
570	TT6
720	TT9L
730	TT9D
740 FDA	TT9D / TT9S FDA
750	TT8
790	TP2
830	TF4
840	TGC206
850	TF225
870	TF4
890	TC6

AMERICAN BRAIDING	EQUIVALENT
300	TK4B
320	TM5
344	TT9D
344L	TT9L
345	TF4
921	TF4
3000G	TC5
3000T	TT2
3000TK	TK4T
4000G	TC5
5000	TR3
5000I	TR31
8000	TG4

AMERICAN BRAIDING	EQUIVALENT
8000G	TR3
8000T	TP1
8000TK	TK5
8100BIL	TP2
8200BIL	TP2

APOLLO®	EQUIVALENT
Alljoint	TT8
Graf-Pak	TR1
220 F	TT5
380	TG4
401	TR1
401 R	TR2
1100	TG2
2200	TT2
2250	TT9S
2280	TT9L
2290	TT9D
2300	TF4
3100	TK4
3200	TP2
3300	TP1

BELDAM BURGMANN®	EQUIVALENT
Araflon	TK4B
Beaver 65	TGC206
Buraflon	TT5
Burasoft	TT9L
Buratex	TF225
Isatherm	TG4
Koton	TC6
Pilotpack	TT2
Pitograph	TR3
Tartan 116	TGC206
Thermoflon	TP1
Thermoflon S	TP1
767	TF225
769	TF225
907	TGC206
2010	TF4
3187	TT9D
3218	TT9D
3239	TT9L

BELDAM BURGMANN®	EQUIVALENT
3240	TT9L or TT9S
3250	TG4
3309	TT9S
3369	TP1
3385	TF4
3392	TK4B
3394	TK5
3408	TT9D
3410	TT9L
3417	TG1L
3420	TK4T
3435	TP1 or TP2
3507	TK4
4000	TR3
4001	TGC206
4002	TF225
4010	TG4
4020	TC5
4040	TR1
4045	TR1 or TR2
5010	TK4B
5020	TK4
5035	TK5
5040	TK5
5846	TT5
6011 A	TG4
6026	TT2
6225	TT9L
6226	TT9D
6226 L	TT9L
6230	TP1
6230 S	TP2
6335	TT2
6426	TK4B
6430 KS	TK5

CHEMSTAR (USA)	EQUIVALENT
90	TC5
152	TT2
154	TT9D
154-S	TT9L
160	TG4
165	TP1

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CHEMSTAR (USA)	EQUIVALENT
165LA	TP2
165-K	TK5
170	TK4B
398	TC5
525-T	TF4
528	TF4
1100I	TR31
1100TCP	TR31
1152	TT2
1152K	TT4T
1190	TM5
1398	TC5
1430	TC5
3165	TC5

CHESTERTON®	EQUIVALENT
1	TG4
2	TG4
80	TF225
324	TT9D
328	TT9L
329	TF4
370	TC5 or TK1L
412-W	TT2 or TM1
477	TC5 or TK1L
477-1	TC5 or TK1L
1315	TG2
1400	TR3
1400R	TR4
1600	TR31
1710	TG8L
1724	TT9D
1725	TT9S
1727	TC1
1728	TT9L
1730	TM1
1740	TK4 or TK4B
1750	TP1 or TP2
1760	TP2
1800	TC51 OR TG1D
1830	TP2
GTP	TR1
Innerlube	TT2
Valvelon	TT8

CRANE®	EQUIVALENT
387I	TC51
1335	TT2
1336	TR3
1340	TG2
1625G	TR3
1635G	TG4
C1045	TT9D
C1050	TT9L
C1056	TT9S
C1057	TT9S
C1061	TK4T
C1064	TK5
C1065	TP2
C1070	TP2
G57	TR3
G58	TR3
K1730	TK4
K1760	VM1 or VM5
K1761	VM1 or VM5

DEPAC®	EQUIVALENT
700	TR1
701	TR2
714	TT9D
718	TT9L
720	TK4B
721	TK4T
722	TK5
723	TK4
730	TG4
740	TC5

DREW®	EQUIVALENT
Amerflon Stem	TT8
Amerine	Varies by Number
400	TG2
600	TC51
1000	TR1
1200	TC5
1400	TP2
2500	TT2

FLEXITALIC®	EQUIVALENT
26 D	TT9D
26 L	TT9L
30	TF225

FLEXITALIC®	EQUIVALENT
43	TF4
45	TGC206
160	TR1
161	TR1
301	TG4
304	TC5
305	TR4
306	TR31
702	TP1
713 D	TG8D
713 L	TG8L
774D	TG1D
774L	TG1L
801	TK5
802	TK4T
803	TT2
900	TP2
1065	TP1
2001	TK4B
2002	TK4B
JP 009	TT8

GARLOCK®	EQUIVALENT
18	TF225
90	TF225
98	TC5
G100	TG4
G200	TG4
127-AFP	TC51
G700	TG4
740	TF225
904	TK4
1300	TR3
1300E	TR3
1303	TR31
1304	TR3
1333-G	TR3
1607-PM7	TT9D
1812	TM1 or TM5
1925	TT2
1965	TG2
5000	TG2
5100	TP1
5200	TK4

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GARLOCK®	EQUIVALENT
5413	TF4
5450	TG6
5481	TG6
5888	TT9L
5889	TT9D
5900	TT9S
5904	TT9S
8909	TG2
8913	TG2
8921	TK4T
8921-K	TK4T
8922	TT2
8968	TP2
Graph-Lock	TR1 or TR2
Thermo-Ceram	TC3
41501	TT2
41602	TG2
41603	TG2
41605	TK4
41606	TP2
41607	TT9D
41608	TT9L
41616	TP2

JAMES WALKER®	EQUIVALENT
127	TGC206
128	TGC206
129	TGC206
130	TK4B
131	TK5
193	TP1
198	TT5
247	TF225
251	TGC206
252	TF225
403 AR	TG8L
564 D	TT9D
464 L	TT9L
489	TG4
496	TT8
500	TF4
505 Ring	TR2
505 Supagraph	TR1
Duramid	TK4B

JAMES WALKER®	EQUIVALENT
Emulsion XAP	TK4
Fluocord	TT8
Fluograph	TP1
Fluolion	TT9D or TT9L
Fluolion Emulsion 6	TG8L
Fluolion XAP	TT2
Fortuna XA	TG1L
Glengarry	TF4
Grafpack	TG4
Hornet	TK5
Ico XA	TG2
Incoval X	TG1D
Liongraph	TP2
Ramiex	TT5
Rover	TGC206
Sextant	TF225
Supeta XA	TG1L
Valcor XA	TC51

I.M.P.®	EQUIVALENT
20	TT9D
25	TP1
35	TK4B
40	TG4
49	TR1
50	TT8
75	TP2
79	TG8L
99	TF4
106	TGC206
107	TF4
4757	TK5
4790	TK5

JOHN CRANE®	EQUIVALENT
25 GF	TG4
30 GF	TG4
45	TT9D
50	TT9L
72 AR	TK4
75 AR	TK4T
104	TT9L
287 I	TG1L
715	TT9S

JOHN CRANE®	EQUIVALENT
804 AR	TK1L
867	TF4
1065	TF4
1065 L	TP2
1066 AR	TG1L
1345	TK4
1625 G	TG4
1990	TG8L
1993	TK5
2001	TK4B
K 10	TR2
K 20	TR2
K 40	TR1
PEP-Cord	TT8
SS 6 AR	TK1L
SS 6 AR Valve	TK1D

KLINGER®	EQUIVALENT
1	TF225
25	TK4B
44	TG4
46	TR3
49	TP1
55	TP2
545	TT9D
2167	TGC206
2168	TGC206
2170	TGC206
3222	TR3
4303	TG8L
4310	TG1D or TG1L
5411	TT9L

LATTY®	EQUIVALENT
60	TF4
1778	TF4
1779	TT5
2790	TT2
3206	TT9L
3206 B	TT9L
3206 S	TT9D
4207	TP1
4208	TP2
4308	TP1

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LATTY®	EQUIVALENT
4757	TK5
4758	TK4T
4788	TK4B
4789	TK4
6000	TG4
6940	TR3 or TR31
Lattygraf	TR1
Lattygraf TSP	TR3 or TR31

MERKEL®	EQUIVALENT
Alchem	TT9D
Aroflex	TK1L
Arolan 2	TK4
Carbosteam	TC51
Graf Flex Tape	TR1
Ramilon	TT5
Unichem	TT9L
Unival	TP1
650	TR2
4586	TT5
6210	TK4B
6211	TK5
6215	TK4
6216	TK5
6226	TK1L
6313	TT9L
6323	TP1
6375	TT9D
6575	TG4

PALMETTO®	EQUIVALENT
1007 (AF)	TG2
1030	TR3
123GFO	TP1
1300	TK1L
1340	TK4T
1347 (AF)	TT2
1350	TK4
1359	TK5
1364	TK4T
1367C	TM1 or VM5
1367FS	TT9S
1367H	TT9D
1367S	TT9L
1367SK	TK4T

PALMETTO®	EQUIVALENT
1371	TM1 or TM5
1382	TP2
1389	TP1
1390	TP2
1392	TM1 or TM5
1392H	TM7
1392S	TM7
1400	TR1
1550	TR3 or TG4
1555	TG4
1585	TC5
1600	TF225
1600G	TGC206
1607	TGC206
1613	TF4
1900	TT8
4062 (AF)	TC51
5000	TR3
5000W	TR31
5080	TR3 or TR4
Palfoil	TR1
Palpack	TT8
Pinnacle	TR2
Pinnacle Flexibraid	TR3
VA1389	TP1

PILLAR®	EQUIVALENT
426	TT5
4505	TT9L
4513	TT9L
4526	TK5B
4527	TP2
4529	TK5
6118	TP1
6501	TT2
6610	TR3
6650	TR1
6710	TR31
6433	TC5

ROBCO®	EQUIVALENT
Graf Tape	TR1
Nestor PT	TT5
Thermo Graf	TR2
750	TC51

ROBCO®	EQUIVALENT
1121	TT9D
1123	TT9L
1140	TP1
1175	TT8
3400	TG4
4029	TK4B
4039	TK4
4040	TF4
5017	TG2
5059	TT2

SEPCO®	EQUIVALENT
GSP	TR2
2	TF225
2GR	TGC206
219	TF4
310	TC51
ML 402	TG2
ML 560	TK1L
ML 2001	TR3
ML 2225	TT2
ML 2225A	TK4T
ML 2235	TT9L
ML 2236	TT9S
ML 2240	TM1 or TM5
ML 2254	TT9D
ML 3333	TC5
ML 3600	TP2
ML 4002	TP1
ML 4004	TK5
ML 4444	TR3
ML 4500	TG4
ML 4700	TM1 or TM5
ML 4800	TK4
ML 6225	TM1 or TM5
ML 6402	TR3
ML 8002	TP2

TBA®	EQUIVALENT
SEE FLEXITALIC®	

TEADIT®	EQUIVALENT
16	TP1
17	TT9D
18	TT9S OR TT9P

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Gland Packings - Equivalents to Other Manufacturers

TEADIT®	EQUIVALENT
19	TT9L
25	TK4B
26	TK4
27 A	TG8L
27 AV	TG8D
27 G	TG1L
27 GA	TG1D
34	TT5
35	TF225
37	TGC206
209	TT5
245	TF225
2000	TR3
2001	TG4
2001IC	TR3
2002	TG4
2003	TK4T
2004	TK4B
2005	TT9D
2006	TT9L
2006FDA	TT9S
2006S	TT9L
2007	TP2
2017	TK5
2019	TG8L
2027	TG1D
2030	TM1 or TM5
2044	TK4
2127	TT2
2138	TF225
2202	TR3
2214	TC51
2235	TR31
2255	TG2
2421	TF4
2422	TT5
3040	TT9D
3050	TT9L
3070	TO2
3078	TP2
4000	TG4
4001	TG2
4002	TC5
4090	TR3

TEADIT®	EQUIVALENT
4090/I	TR31
5000	TK4B
5001	TK4T
5002	TK4
5003	TK1L
5004	TK5
6002	TG8L
6004	TG1D
8300	TT2
8500	TT9S
8800	TG2

TEXPACK®	EQUIVALENT
4109	TK1L
4116	TG8
4118	TG1L
4119	TG1D
4121	TF225
4122	TGC206
4123	TC6
4129	TT5
4130	TF4
4131	TT9D
4132	TT9L
4132A	TT9L
4133	TK4
4134	TG4
4135	TC5
4136	TT8
4137	TC51
4138	TC51
4140	TR31
4141	TP1
4146	TK4T
4148	TK1L
4149	TP2
4150	TK1D
4151	TP1
4154	TK5
4155	TK5
4156	TP2
4157	TP2
4158	TT5
4161	TF4

TEXPACK®	EQUIVALENT
4163	TK4T
4164	TM5
4165	TT2
4166	TT2
4167	TK5
4168	TR3
4169	TR31
4170	TR4
4173	TG2
4180	TR4
4183	TR31
4190	TT6

TOMBO®	EQUIVALENT
29	TG4
40	TG4
2220 Graseal	TR2
2220 RP	TR1
2280	TR31
9033	TT9S
9034	TT9L
9038	TP1
9040	TK4
9044	TT2

UNIVERSAL PACKING®	EQUIVALENT
7120 E	TP1
7244	TC51
7538	TM1 or TM5
7726	TK1L or TK1D
7783 L	TT9L
7803	TT2
7808	TG2
7110G1	TR3
7110G2	TR31
74490	TR3

U.S. SEAL MFG.™	EQUIVALENT
58	TP2
302	TT2
303	TG2
310	TC1
792	TT9S

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Gland Packings - Equivalents to Other Manufacturers

UTEX®	EQUIVALENT
155	TF4
165	TF4
200	TF4
201	TF4
204	TF225
206	TF4
208	TF4
210	TP1
212	TK4 or TK4D
213	TK4B
214	TK5
215	TK1L or TK4T
216	TK4T or TK5
217	TK4T
220	TK4
222	TK4
225	TK5
226	TC5 or TG2 or TR3
227	TG51 or TR31
228	TP2
229	TG4
230	TC5
231	TT9L
232	TT9D
233	TF4
234	TM1 or TM5
235	TM1 or TM5
236	TC5 or TG2
237	TT2
238	TT2
240	TK4B
241	TK4T
243	TP2
244	TP2
245	TT9S
246	TP2
248	TM5
249	TP2 or TT9L
251	TT2
256	TP2
276	TT9L
277	TG2
278	TT9S

UTEX®	EQUIVALENT
279	TP2
280	TG4
609	TC5
610	TR3
631	TR3
632	TR3
683	TR31
684	TR31
685	TR31
686	TR3
687	TR4
688	TR2 or TR3
689	TR31
690	TG4
691	TR31

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Gland Packing Alternatives

REQUESTED GLAND PACKING					ALTERNATIVE GLAND PACKING					KEY DIFFERENCES / NOTES
Type	Temperature	Rotary Speed	pH Range	Pressure	Type	Temperature	Rotary Speed	pH Range	Pressure	
TG8L - Glass Fibre Packing with PTFE lubricant	**-40°C to 280°C (-40°F to 530°F)**	12 m/s	2 - 12	150 bar (2165 psi)	TT2 - Synthetic PAN Fibre PTFE Lubrication	**-40°C to 250°C (-40°F to 482°F)**	18 m/s	2 - 14	100 bar (1450 psi)	1. TT2 is a lower-cost alternative to TG8L. 2. TG8L glass fibres are heavily lubricated and impregnated with PTFE dispersion and an inert lubrication, offering exceptional temperature resistance but relatively low strength capabilities. 3. TT2 is braided with PAN fibres, impregnated heavily with PTFE dispersion and further treated with special lubricants. Its synthetic fibre has greater strength and durability compared to TG8L. 4. TG8L can handle temperatures of up to **280°C (530°F)** when compared to **250°C (482°F)** in TG2. TG8L can handle pressures up to 150 bar, as opposed to up to 100 bar in TT2.
TG1L - Glass Fibre Packing with lubri-cants and graphite	**-100°C to 480°C (-148°F to 896°F)**	10 m/s	4 -11	150 bar (2165 psi)	TG2 - Synthetic PAN fibre combination with pure carbon fibres.	**-50°C to 250°C (-58°F to 482°F)**	10 m/s	4 - 12	80 bar (1160 psi)	1. TG2 is a lower-cost alternative to TG1L. 2. TG1L glass fibres are thoroughly impregnated with graphite, offering exceptional temperature resistance but relatively low strength. 3. TG2 is braided with PAN fibres combined with pure carbon fibres, offering soft and comfortable packing. 4. TG1L can handle temperatures of up to **480°C (96°F)**, compared to **250°C (482°F)** in TG2. TG1L can handle pressures up to 150 bar, as opposed to up to only 80 bar in TG2.
TM5 - Thermoset fibre packing made of unique aramidic composite fibres.	**-100°C to 250°C (-148°F to 482°F)**	20 m/s	2 - 12	130 bar (1885 psi)	TM1 - Thermoset fibre packing made of unique aramidic composite fibres.	**-100°C to 250°C (-148°F to 482°F)**	20 m/s	2 - 12	130 bar (1885 psi)	1. TM1 is less cost-effective compared to TM5 but is a similar product that offers exceptionally high tensile strength, outstanding heat resistance, along with low friction and excellent cool running properties.
TM1 - Thermoset fibre packing made of unique aramidic composite fibres.	**-100°C to 250°C (-148°F to 482°F)**	20 m/s	2 - 12	130 bar (1885 psi)	TM5 - Thermoset fibre packing made of unique aramidic composite fibres.	**-100°C to 250°C (-148°F to 482°F)**	20 m/s	2 - 12	130 bar (1885 psi)	1. TM5 is a lower-cost alternative to TM1, providing the same service but care must be taken not to over-tighten the gland, nor starve the packing of product or flush lubricants.
TT9L - Pure PTFE fibres	**-40°C to 280°C (-40°F to 530°F)**	12 m/s	0 - 14	120 bar (1740 psi)	TT9S - FDA approved pure PTFE fibres.	**-200°C to 280°C (-328°F to 530°F)**	12 m/s	0 - 14	120 bar (1740 psi)	1. TT9S is solely manufactured from FDA compliant materials. 2. TT9L is also designed for food / water applications but at a much more economical price.

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Gland Packing Alternatives

REQUESTED GLAND PACKING					ALTERNATIVE GLAND PACKING					KEY DIFFERENCES / NOTES
Type	Temperature	Rotary Speed	pH Range	Pressure	Type	Temperature	Rotary Speed	pH Range	Pressure	
TP1 - 100% Gore or GFO Fibre Packing	**-200°C to 280°C (-328°F to 530°F)**	25 m/s	0 - 14	120 bar (1740 psi)	TP2 - G1 Fibre	**-200°C to 280°C (-328°F to 530°F)**	25 m/s	0 - 14	120 bar (1740 psi)	1. TP2 is a lower-cost alternative to TP1. 2. TP2 is manufactured using G1 fibre that is comparable in performance to that of GFO fibre (TP1), at a fraction of the price.
TP2 - G1 Fibre	**-200°C to 280°C (-328°F to 530°F)**	25 m/s	0 - 14	120 bar (1740 psi)	TP1 - 100% Gore or GFO Fibre Packing	**-200°C to 280°C (-328°F to 530°F)**	25 m/s	0 - 14	120 bar (1740 psi)	1. TP1 is more expensive compared to TP2 but is made of 100% GFO fibre, enabling it to handle high mechanical loads (highly abrasive media or high pressure). 2. TP1 is a direct replacement.
TR3 - Expanded Graphite Packing with Addition of PAN fibres.	**-200°C to 600°C (-328°F to 1112°F)**	30 m/s	0 - 14	200 bar (2900 psi)	TR4 - 100% Grafan Yarns, Pure Expanded Graphite Packing	**-100°C to 450°C (-148°F to 842°F)**	30 m/s	0 - 14	300 bar (4351 psi)	1. TR4 is more expensive compared to TR3. 2. TR4 is expanded graphite packing with the addition of PAN fibres. TR3 is 100% pure Grafan expanded graphite packing. 3. TR4 can handle pressures of up to 300 bar, as opposed up to 200 bar in TR3.
TR4 - 100% Grafan Yarns, Pure Expanded Graphite Packing	**-100°C to 450°C (-148°F to 842°F)**	30 m/s	0 - 14	300 bar (4351 psi)	TR3 - Expanded Graphite Packing with Addition of PAN fibres.	**-200°C to 600°C (-328°F to 1112°F)**	30 m/s	0 - 14	200 bar (2900 psi)	1. TR3 is more economical compared to TR4. 2. TR3 is 100% pure Grafan expanded graphite packing. TR4 is an expanded graphite packing with the addition of PAN fibres. 3. TR3 can work in extreme conditions, higher temperatures and shaft speeds compared to TR4.
TC6 - Twisted Cotton Yarn Packing Impregnated with PTFE Dispersion	**-30°C to 120°C (-22°F to 248°F)**	12 m/s	4 - 12	100 bar (1450 psi)	TT5 (can also offer TF4) - Natural Ramie Fibres Impregnated with PTFE Dispersion.	**-30°C to 120°C (-22°F to 248°F)**	12 m/s	2 - 12	100 bar (1450 psi)	1. TT5 is more expensive compared to TC6. 2. TT5 is made of natural ramie fibres impregnated with PTFE. 3. TC6 is made from twisted cotton yarns with PTFE dispersion. 4. Both fibres are classed as natural yarns.
TT5 Natural Ramie Fibres Impregnated with PTFE Dispersion.	**-30°C to 120°C (-22°F to 248°F)**	12 m/s	2 - 12	100 bar (1450 psi)	TC6 (can also offer TF4) - Twisted Cotton Yarn Packing Impregnated with PTFE Dispersion	**-30°C to 120°C (-22°F to 248°F)**	12 m/s	4 - 12	100 bar (1450 psi)	1. TT5 is cost effective alternative to TC6. 2. TC6 is made from twisted cotton yarns with PTFE dispersion. 3. TT5 is made of natural ramie fibres impregnated with PTFE. 4. Both fibres are classed as natural yarns.
TF4 - PTFE Flax Packing Impregnated with PTFE	**-30°C to 120°C (-22°F to 248°F)**	10 m/s	2 - 12	130 bar (1885 psi)	TT5 - Natural Ramie Fibres Impregnated with PTFE dispersion.	**-30°C to 120°C (-22°F to 248°F)**	12 m/s	2 - 12	130 bar (1885 psi)	1. TT5 is more expensive compared to TF4. 2. TT5 is made of natural ramie fibres impregnated with PTFE. 3. TF4 is PTFE flax packing impregnated with PTFE and treated with break-in lubricants.

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Gland Packing Alternatives

REQUESTED GLAND PACKING					ALTERNATIVE GLAND PACKING					KEY DIFFERENCES / NOTES
Type	Temperature	Rotary Speed	pH Range	Pressure	Type	Temperature	Rotary Speed	pH Range	Pressure	
TF225 - Heavy Duty Natural Fibre Yarns.	**-20°C to 120°C (-4°F to 248°F)**	8 m/s	5 -9	50 bar (725 psi)	TF4 (can also offer VT5 or VC6) - PTFE Flax Packing Im-pregnated with PTFE	**-30°C to 120°C (-22°F to 248°F)**	10 m/s	2 - 12	130 bar (1885 psi)	1. TF225 and TF4 cost approximately the same. 2. TF4 is PTFE flax packing impregnated with PTFE and treated with break-in lubricants. 3. TF4 is of superior service in heavy reciprocating machinery, rotary applications handling abrasive media, paper, marine, petro-chemicals, sugar and water applications. 4. TF225 is suitable for all general water based applications in pumps and valves.
VGC206 - Lubricated Graphite Cotton Packing	**-20°C to 120°C (-4°F to 248°F)**	10 m/s	4 - 10	50 bar (725 psi)	TG2 - Synthetic PAN fibre combination with pure carbon fibres.	**-50°C to 250°C (-58°F to 482°F)**	10 m/s	4 - 12	80 bar (1160 psi)	1. TG2 is more expensive compared to TGC206. 2. TG2 is braided with PAN fibres combining pure carbon fibres. 3. TGC206 is a cotton packing impregnated with mineral lubricants and graphite. 4. TG2 has superior capability when working to higher temperatures, ranging up to **580°C (482°F),** compared to **120°C (248°F)** in TGC206. 5. TG2 can work to faster rotating speeds up to 10 m/s when compared to up to 8 m/s in TGC206.

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