Full Gland Packing Catalogue

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一、Introduction

This catalogue is designed for global B2B procurement professionals to evaluate and select gland packing materials for pumps, valves and rotating equipment. It focuses on technical suitability, procurement-friendly specification data, common sizes and selection guidance. All numeric ranges are typical industry values; consult manufacturer datasheets for final selection and certification.

二、PTFE Packing

Overview: PTFE (polytetrafluoroethylene) packings provide outstanding chemical resistance, broad temperature capability and low friction. Common variants include Pure (Virgin) PTFE yarn packings, ePTFE expanded PTFE packings, and composite PTFE packings with aramid corners or graphite blends for improved performance.

Applications: Chemical process pumps, corrosive services, food, pharmaceutical and where low friction/low leakage is required.

Product	Typical Construction	Typical Size (mm)	Typical Temp Range (°C)	Key Benefits / Notes
Pure PTFE Gland Packing with Oil	Virgin PTFE yarns, lubricated	3x3 to 12x12 (common braid sizes)	-200 to +260	Excellent chemical resistance; low friction; inert. Verify compatibility with solvents at elevated temps.
White PTFE Packing with Aramid Corners	PTFE yarn faces, aramid yarn corners, PTFE-impregnated	3x3 to 50x50 (available)	-100 to +260 (depending on construction)	Aramid corners provide abrasion resistance and strength; used where shaft wear is a concern. See manufacturer datasheets for speed limits.
Black PTFE Graphite Gland	PTFE + graphite blended yarns	3x3 to 12x12	-200 to +260	Improved heat dissipation and break-

Product	Typical Construction	Typical Size (mm)	Typical Temp Range (°C)	Key Benefits / Notes
Packing				in performance versus pure PTFE; useful in higher temperature seals.

三、Kevlar / Aramid Packing

Overview: Dupont Kevlar® (aramid) braided packings are a widely used asbestos replacement. They provide excellent mechanical strength, wear resistance and can be lubricated or PTFE-impregnated for chemical compatibility.

Applications: General service pumps, reciprocating and rotary shafts where shaft hardness is sufficient (min. 60 HRC recommended for some aramid packings to avoid shaft wear).

Product / Grade	Typical Construction	Typical Size (mm)	Typical Temp Range (°C)	Notes

Product / Grade	Typical Construction	Typical Size (mm)	Typical Temp Range (°C)	Notes
Kevlar / Aramid Packing (general)	Braided aramid yarns, optional PTFE impregnation / silicone oil	3x3, 4x4, 5x5, 6x6, 8x8 up to 50x50	-60 to +260 (varies by impregnation)	Excellent abrasion resistance; may require shaft hardness and lubrication; check manufacturer speed recommendations (some products rated up to ~20 m/s).
Kevlar – PTFE lubricated	Aramid core with PTFE lubrication	3x3 – 25x25	-60 to +260	Combines strength of aramid with chemical resistance and low friction of PTFE.

四、Graphite Packing

Overview: Flexible/expanded graphite packings are used where high temperature, steam, and wide chemical resistance are required. They are available as pure expanded graphite, graphite impregnated, graphite-PTFE hybrids and reinforced types with filament or wire mesh.

Applications: Steam valves, high-temperature pumps, petrochemical and refinery services.

Product	Typical Construction	Typical Size (mm)	Typical Temp Range (°C)	Key Benefits / Notes
Graphite Impregnated Packing	Expanded graphite yarn braided, graphite dispersion impregnation	3x3 – 12x12	-200 to +450 (up to ~510 in inert/limited oxygen environments)	Excellent high-temp stability and chemical range; low particulate; can be reinforced for blowout resistance.
Graphite PTFE Hybrid Packing	Graphite filaments + PTFE filaments	3x3 – 12x12	-200 to +260 (PTFE-limited)	Combines graphite high-temp sealing with PTFE chemical compatibility where required.
Reinforced Graphite Packing	Graphite braid with non-metallic/metallic reinforcement	various	-200 to +450	Improved mechanical strength and controlled leakage; suitable for high-pressure valves.

五、Carbon Fiber Packing

Overview: Carbon fiber packings are typically made from braided carbon yarns, often impregnated with PTFE or graphite dispersions to improve lubrication and sealing.

Applications: High-temperature rotary equipment, turbines, and where low friction and thermal stability are needed.

Product	Typical Construction	Typical Size (mm)	Typical Temp Range (°C)	Notes
Carbon Fiber – PTFE Impregnated	Braided carbon yarn, PTFE impregnation	3x3 – 20x20	-100 to +350 (depending on impregnation)	Good thermal stability; suitable for higher temp applications; check chemical compatibility with impregnation.
Carbon Graphite Packing	Carbon fibre braid with graphite dispersion	3x3 – 12x12	-200 to +450	Offers thermal conductivity and resilience in severe services.

六、Phenolic Packing

Overview: Phenolic fibre packings are resin-impregnated fibres (phenolic resin) offering good mechanical strength and oil resistance.

Applications: Sealing for industrial pumps handling oil-based media, where moderate temperature resistance is adequate.

Product	Typical Construction	Typical Size (mm)	Typical Temp Range (°C)	Notes
Phenolic Fibre Packing	Braided phenolic-impregnated fibre yarns	3x3 – 12x12	-20 to +200	Economical, good for oil and hydrocarbon services; not recommended for very high temperature steam.

七、Asbestos Gland Packing (Legacy)

Overview: Historically used for a wide variety of sealing tasks because of high temperature and chemical resistance. Due to severe health hazards, asbestos

packings are largely phased out and controlled by regulation. Modern aramid, graphite and PTFE alternatives are recommended.

If legacy asbestos packings are encountered, comply with local hazardous materials regulations and use trained personnel for removal.

Product	Typical Use	Notes
Asbestos-Graphite Packing	Legacy high-temp seals	Use only in legacy equipment; follow local regulations and disposal requirements.
Asbestos PTFE Packing	Legacy chemical-resistant seals	Phased out in most jurisdictions; replace with non-asbestos equivalents.

八、Natural & Acrylic Fibres

Overview: Natural fibres like ramie and synthetic acrylic fibre packings are used in less severe applications where cost and moderate performance are priorities.

Applications: Water pumps, some HVAC and general utility services.

Product	Typical Construction	Typical Size (mm)	Temp Range (°C)	Notes
Ramie Fibre Packing	Braided natural ramie yarn	3x3 – 12x12	-20 to +120	Good for water and mild chemical services; biodegradable fibre characteristics.
Acrylic Fibre Packing	Braided acrylic yarns	3x3 – 12x12	-30 to +120	Economical; used in non-aggressive media and general services.

九、Gland Packing Rings

Overview: Pre-cut gland packing rings (sets of rings sized to pump/valve stuffing box dimensions) are offered in various materials and are convenient for rapid replacement. Ring sets reduce installation time and ensure correct cross-sectional fit.

Ordering: Specify material, cross-section size (e.g., 1/4" x 1/4" or 6mm x 6mm), inner diameter (ID), and number of rings required.

Product	Materials Available	Common Sizes	Notes
Pre-cut Packing Rings	PTFE, Graphite, Kevlar, Carbon, Phenolic, Acrylic	ID: per shaft size; Cross-section: 3x3 to 20x20 common	Supplied in sets; some vendors provide custom-cut sizes and gasket kits.

十、Selection Guide & Installation

Selection

checklist:

- Identify fluid and temperature range.
- Confirm shaft speed and shaft hardness.
- Determine required service life and acceptable leakage.
- Consider environmental and regulatory constraints (e.g., asbestos-free requirement).

Installation

best practices:

- Clean stuffing box and shaft before installation.

- Fit rings with staggered joints (usually 90° or 180° apart depending on # of rings).
- Use correct gland follower and follow torque/adjustment sequence; avoid overcompression.
- Break-in: run at reduced speed then monitor leakage and adjust gland gradually.

十一、Technical Data & Typical Specifications

The following technical parameters are commonly referenced by manufacturers and are useful for procurement specifications.

Note: Values are typical industry ranges. For guaranteed limits, solicit manufacturer datasheets or third-party test certificates.

Parameter	Typical Range / Value	Notes
Common braid cross-section	3x3 mm to 50x50 mm	Smaller sizes for valves and small shafts; larger for mechanical seals and large pumps.
Temperature capability PTFE	-200°C to +260°C	Material inherent limits; impregnations slightly change ranges.
Temperature	-200°C to +450°C (up to ~510°C in inert	Graphite's high-temp capability

Parameter	Typical Range / Value	Notes
capability Graphite	conditions)	makes it preferred for steam service.
Typical shaft speed guidance	up to 20 m/s for select aramid packings; many graphite/carbons for lower speeds	Always confirm with datasheet; lubrication and shaft hardness affect limits.
Pressure limits	Varies widely; some reinforced graphite systems rated to hundreds of bar when used with metal backup rings	Pressure rating depends on design, gland, and backup components.

十二、Quality, Standards & References

Recommended action for procurement teams: request manufacturer's product datasheet, material safety data sheet (MSDS) and where applicable, third-party test certificates (e.g., API, ISO performance tests). Common references and suppliers used in preparing this catalogue are listed below.

- Chesterton: Packing & Gasket Catalog (product datasheets for graphite & PTFE packings).
- Garlock: Compression Packing Catalog (graphite, carbon and reinforced styles).

- James Walker (Lionpak): Reinforced Graphite packing datasheets.
- Flexitallic & Fluid Sealing: Compression packing technical brochures and selection handbooks.
- Various manufacturer product pages for PTFE with aramid corners, Kevlar/aramid yarn packings and carbon fibre packings.

For bid requests, include: exact material designation, cross-section, shaft size (or stuffing box ID), expected fluid, temperature, pressure and desired shelf life/warranty.