

Asbestos Gland Packing

Attribute	Typical / Standard Specification (English)	Source / note
Material (primary)	Chrysotile asbestos yarn (long-staple, white chrysotile) — yarn free from grit/rock.	IS 4687:1995 (material requirements).
Typical grades / composition limits	Type 1 (lighter): yarn content and drying/ignition limits per IS; Type 2 (medium): asbestos yarn $\geq 50\%$ by mass, lubricant $\leq 49\%$, graphite $\leq 4\%$; Type 3 (heavier): asbestos yarn $\geq 64\%$, lubricant $\leq 33\%$, graphite $\leq 11\%$.	Composition and mass-limits specified in IS 4687.
Construction	Braided / plaited square or round-section rope; optionally metal-wire reinforced (lead/brass/white metal) or duplex braided, impregnated with lubricants and graphite or mica.	Manufacturer catalogs (Champion, Garlock, Flexitallic) describe braided/plaited construction and metallic reinforcement options.
Cross-section shapes	Square (preferred for many types) or round; die-formed rings also supplied.	IS4687 preferred dimensions and common practice.
Mass-per-metre (manufacturing limits / formulae)	Per IS4687: coefficients (mass in g/m) = Type 1: round = $0.825 \cdot d^2$; square = $0.963 \cdot S^2$. Type 2: round = $1.37 \cdot d^2$; square = $1.67 \cdot S^2$. Type 3: round = $1.27 \cdot d^2$; square = $1.57 \cdot S^2$. (d, S in mm). — Use these formulas to compute mass per metre / ordering weight.	Exact formulas taken from IS4687:1995 (see clauses on mass per metre). Calculations below use these formulae.
Standard / preferred cross-section sizes (mm)	Preferred sizes listed in IS4687 include (examples): 2.3, 3, 4, 5, 6, 7.5, 8, 10, 11, 12, 15, 16, 18, 20, 22, 25, 30, 32, 35, 38, 40, 42, 45, 48, 50 mm. (Other sizes available by agreement.)	IS4687 clause on dimensions.
Typical coil / supply lengths	Common coil lengths for gland packing (manufacturer practice): 3 m, 8 m, 20 m (small-section coils commonly 8 m or 20 m; many suppliers also sell 3 m coils or cut lengths / die-formed rings). Final coil length agreed with manufacturer.	Flexitallic / supplier catalogs list standard coil lengths; many distributors list 3 m coils for retail packs.

Attribute	Typical / Standard Specification (English)	Source / note
Recommended ring cutting / ring-length formula	Cut-ring length (for a given stuffing-box) = $\pi \times ((OD_ring + ID_ring) / 2)$. (Use same units mm or inches.) — many packing calculators use this formula.	Industry packing calculators / installation guides.
Service temperature (typical ranges)	Varies by product and reinforcement: many graphited/impregnated asbestos packings rated $\approx -100^\circ\text{C}$ up to $+260^\circ\text{C}$ to $+500^\circ\text{C}$ for non-metallic graphited grades; metallic wire-reinforced or special grades may be specified to $+500^\circ\text{C}$ or higher for short periods (see manufacturer datasheet for specific style).	Manufacturer datasheets (Champion examples show typical service ranges per style). Always check the specific product datasheet.
Chemical compatibility / pH	Graphited/lubricated asbestos packings commonly cover a wide pH range (e. g., pH 2 - 12 claimed for some grades); special grades for caustic service also exist (e. g., caustic-resistant treated braids). Always verify with manufacturer for oxidizing agents.	Champion datasheet examples; IS 4687 notes purchaser specify acid tests for special requirements.
Typical applications	Pumps (rotating shafts), valve stems (reciprocating/rotary), steam glands, expansion joints — high temperature / steam / oil / general industrial fluids (depending on grade).	Manufacturer catalogs (Chesterton, Flexitallic, Garlock).
Mechanical / installation notes	Stuffing-box depth guidelines (e. g., 5W - 7W rules), surface finish and shaft run-out limits apply; rings may be die-formed for precision fit. Follow supplier installation instructions.	Garlock / Chesterton installation & packing manuals.
Health & regulatory note	Asbestos is a regulated hazardous material in many jurisdictions. Many major packings manufacturers now supply asbestos-free alternatives; check local law and supplier certification before ordering or installing.	John Crane and other manufacturers state availability of asbestos-free alternatives; regulatory caution recommended.