

SHIVPRIYA TEXCHEM · KNOWLEDGE SERIES

Lyocell. The fibre re-writing the Indian textile map.

Wood to pulp. Pulp to fibre. Fibre to the most-demanded yarn in global fashion. A working guide to 100% lyocell, its process, its blends and its applications — and why we believe it is the direction the Indian market is heading in.

1.3 mn+

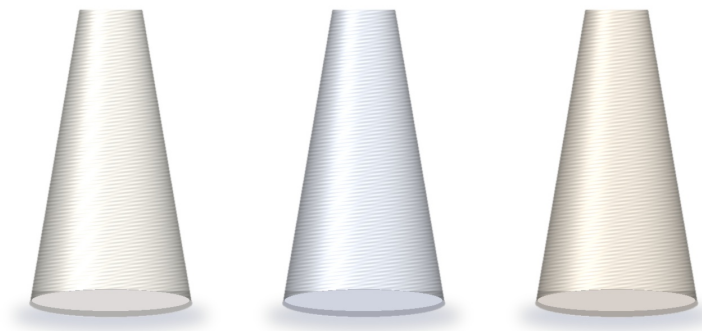
tonnes — global lyocell capacity crossed in 2025

99%+

solvent recovered in the closed-loop process

100%

wood-based, biodegradable cellulosic fibre



Bridging world-class spinning mills and your needs, since 2003.

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CHAPTER 01

What exactly is lyocell?

Lyocell is a generic fibre name, not a brand. It is a man-made cellulosic fibre regenerated from wood pulp by dissolving cellulose directly in a solvent — without first converting it into a chemical derivative. That single difference is the entire story.

NATURAL	MAN-MADE CELLULOSIC	SYNTHETIC
Cotton	Viscose	Polyester
Linen	Modal	Nylon
Wool	LYOCELL	Acrylic
Silk		

Plant-based raw material, engineered fibre — lyocell is the newest and cleanest route

BRAND	PRODUCER	WHAT IT SIGNIFIES
TENCEL™ Lyocell	Lenzing, Austria	The original branded lyocell and the global quality benchmark; largest line in Prachinburi, Thailand.
Excel™ / Liva	Birla Cellulose (Grasim), India	India's lyocell, produced in Gujarat. Liva Reviva grades incorporate recycled cotton.
Sateri Lyocell	Sateri, China	Four mills and an aggressive capacity build-out; volume and price led.
Generic lyocell	Other Chinese & Korean producers	Commodity grade; tenacity, whiteness and fibrillation control vary supplier to supplier.

Buyer's note. A label may read TENCEL™ Lyocell, Excel or simply Lyocell — the fibre class is identical, but tenacity, dye uptake, whiteness and fibrillation behaviour are not interchangeable between producers. Always qualify the fibre origin before committing a bulk programme.

Raw material

Certified wood pulp — eucalyptus, beech, birch; also bamboo and recycled cotton.

Solvent

NMMO, an organic amine oxide. Non-toxic, recovered and re-used.

Supplied as

Staple fibre, 1.2–1.7 dtex, in 38 / 44 / 51 mm cut lengths.

End of life

Biodegradable and compostable in soil, fresh water and marine conditions.

CHAPTER 02

Wood to fibre: the closed loop

Lyocell is made by dry-jet wet spinning. Cellulose is dissolved physically in a hot amine-oxide solvent, extruded, precipitated in water, and the solvent is pulled back out of the bath and re-used. Almost nothing leaves the system.



01 Certified wood sourcing

FSC / PEFC certified hardwood from managed plantations — eucalyptus, beech, birch — increasingly supplemented with bamboo and recycled cotton.

02 Dissolving-grade pulp

Chipped, cooked and bleached to a very high alpha-cellulose content. Pulp purity governs final fibre whiteness and strength.

03 Direct dissolution in NMMO

Pulp is mixed with hot N-methylmorpholine-N-oxide into a clear dope. **The critical step** — dissolution is physical. No xanthation, no carbon disulphide, no derivatisation.

04 Filtration and extrusion

Forced through fine spinneret holes and drawn across a short air gap that orients the cellulose along the fibre axis — the reason lyocell is the strongest cellulosic.

05 Coagulation and washing

Cellulose precipitates instantly in the dilute bath into a smooth, round, dense filament, then is washed free of solvent, dried, crimped, cut and baled.

06 Solvent recovery

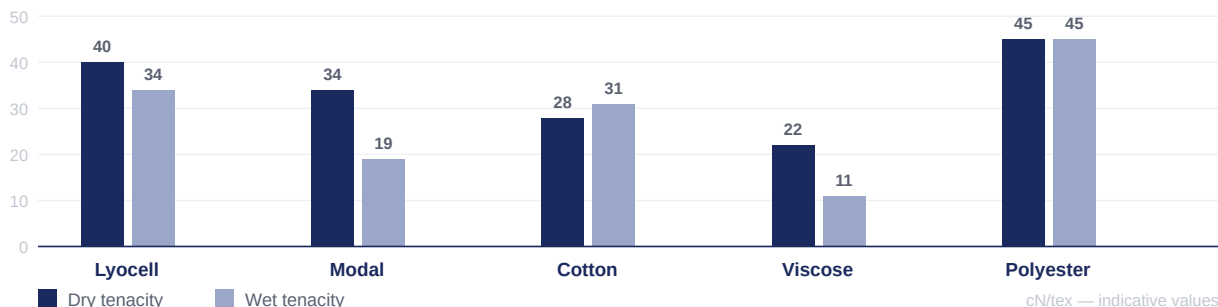
Wash water is evaporated, NMMO recovered at over 99% and returned to dissolution, process water recycled. Effluent load is a fraction of a viscose line.

STAGE	VISCOSE ROUTE	LYOCELL ROUTE
Chemistry	Alkali steeping and xanthation with carbon disulphide; cellulose derivatised, then regenerated in acid	Physical dissolution in one organic solvent; no derivative formed
Key chemicals	CS ₂ , caustic soda, sulphuric acid, zinc salts	NMMO and water
Recovery	Partial; heavy effluent and gas treatment required	Closed loop; over 99% solvent recovered
Cycle	Long multi-stage ageing and ripening	Short, continuous, far fewer stages

CHAPTER 03

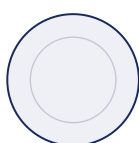
What the fibre actually does

Lyocell is the only cellulosic that holds its strength when wet. For a spinner and a processor that one property changes machine settings, wet-processing behaviour and the life of the fabric.



PROPERTY	TYPICAL VALUE	COMMERCIAL MEANING
Dry tenacity	38–42 cN/tex	Finer counts spinnable, fewer end-breaks, higher ring-frame productivity
Wet tenacity	32–36 cN/tex	Survives repeated wet processing and laundering — garments last
Elongation, dry	14–16%	Comfortable handle with good recovery; supports stretch blends
Moisture regain	11–13%	Absorbs and releases fast — cool, dry and low-odour next to skin
Cross-section	Round, smooth, dense	Fluid drape and silk-like lustre without chemical softeners
Fibrillation	Controllable	An asset, not a defect — enzyme or caustic control gives peach-touch and suede finishes
Dyeing	Reactive dyes	Same class as cotton, with deeper shade build-up and excellent fastness
Dimensional stability	High	Materially less shrinkage than viscose — fewer rejections and returns
Biodegradability	Full	Meets brand end-of-life criteria without a separate certification story

Process caution for your mill. Uncontrolled fibrillation in wet processing causes surface haze, greying and pilling. Lyocell needs low-tension, low-friction wet handling, correct liquor ratios, and either a controlled enzymatic treatment or a cross-linked (A100-type) grade.



LYOCELL

Round and smooth — fluid drape, lustre



VISCOSE

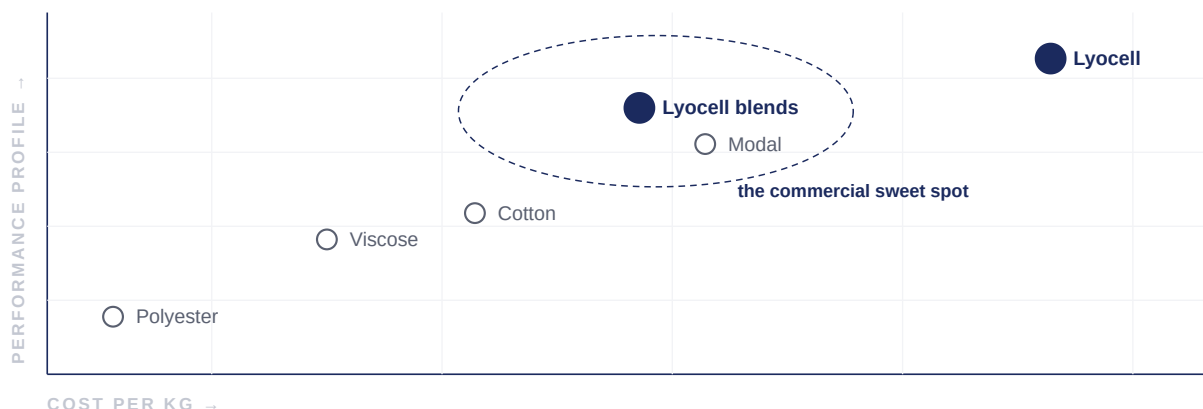
Serrated — weaker wet, more shrinkage

CHAPTER 04

Lyocell against the alternatives

A like-for-like view of the five fibres competing for the same garment programme. Ratings are indicative and read horizontally, not as absolute laboratory values.

PARAMETER	LYOCELL	VISCOSE	MODAL	COTTON	POLYESTER
Origin	Wood pulp	Wood pulp	Beech pulp	Cotton crop	Petroleum
Chemistry	Closed loop, NMMO	CS ₂ xanthation	Modified viscose	Agricultural	Polymerisation
Dry strength	Highest cellulosic	Low	Medium	Medium	Very high
Wet strength	Excellent	Poor	Moderate	Good	Excellent
Moisture management	Excellent	Very good	Very good	Good	Poor
Drape and lustre	Silk-like	Very good	Very good	Matte	Synthetic
Shrinkage control	High stability	Weak	Moderate	Moderate	High stability
Biodegradable	Yes	Yes	Yes	Yes	No
Microplastic shed	None	None	None	None	Yes
Price position	Premium	Value	Mid-premium	Volatile	Lowest
Brand and EU pull	Strong, rising	Under scrutiny	Positive	Positive	Under pressure

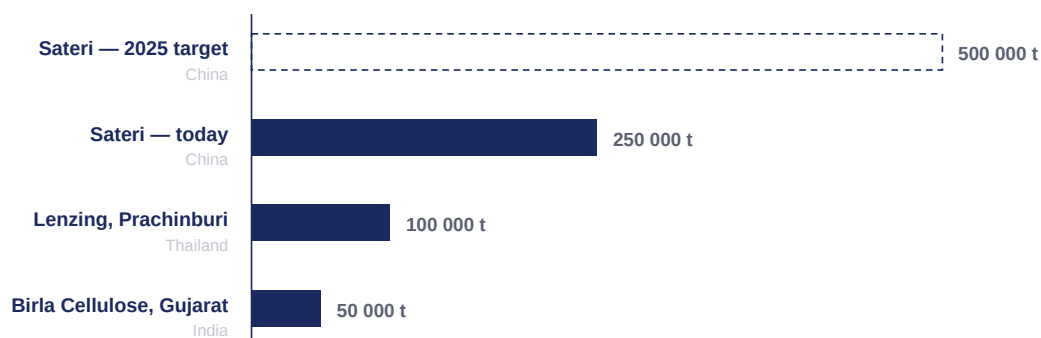


The honest trade-off. Lyocell carries a real premium over viscose and a large one over polyester, and supply sits with a handful of producers. Pure lyocell will not win commodity volume on price — blending is what makes it commercially scalable.

CHAPTER 05

The race for capacity

Lyocell was invented and commercialised in Europe. India took an early lead in Asia. China then moved on it at a scale nobody else has attempted. Global capacity crossed 1.3 million tonnes in 2025 and is still building.



Global lyocell capacity crossed 1.3 million tonnes in 2025 and continues to build.

Birla Cellulose (Grasim) runs India's lyocell capability from Gujarat under the Excel and Liva brands. Sateri has built four mills in China and re-positioned its corporate identity around the fibre. Lenzing holds the technology heritage and the TENCEL™ benchmark.

Why everyone wants it at the same time

Europe is tightening the rules

Extended producer responsibility, textile waste rules, chemical management requirements and digital product passports are moving from proposal to enforcement. Brands need fibres that survive an audit.

Brands have committed publicly

H&M, Inditex, Decathlon, Uniqlo and others have published material-mix targets. They want fabric that feels premium and pollutes less. Lyocell is the shortest path to both.

Viscose is under scrutiny

The carbon-disulphide route carries an emissions and effluent story that is increasingly hard to defend in a supply-chain disclosure.

Polyester is exposed

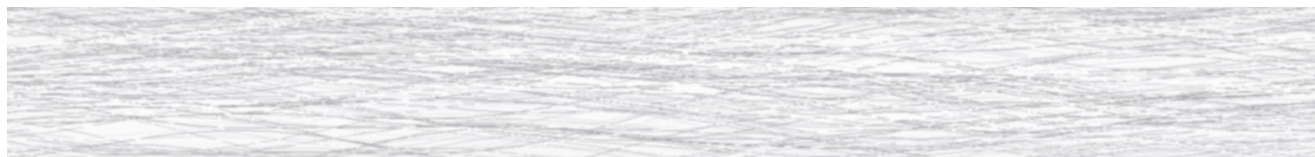
Petroleum-linked pricing, microplastic shedding and recycled-content claims under challenge. Polyester keeps its volume but is losing the premium conversation.

What this means for the Indian yarn trade. India has the pulp integration, the wood sourcing base, the spinning capacity and the brand relationships. What it has lacked is lyocell fibre volume. As availability improves, the constraint moves down the chain — to **spinning mills that can run lyocell and its blends consistently**. That is where the margin and the relationships will sit for the next decade.

CHAPTER 06

Who makes lyocell, and who spins it

Lyocell fibre comes from a small number of producers worldwide. Yarn is a separate step — and the mills that can spin it consistently are the real bottleneck in India today.



FIBRE PRODUCERS

Lenzing AUSTRIA · THAILAND TENCEL™ Lyocell. The originating technology and the global quality benchmark.	Birla Cellulose INDIA · GRASIM Excel™ and Liva. India's lyocell, made in Gujarat; Liva Reviva adds recycled cotton.	Sateri CHINA Four mills across Rizhao, Changzhou, Nantong and Jining; the largest capacity build-out.	Others CHINA · KOREA A growing set of commodity-grade producers. Quality and consistency vary; qualify before bulk.
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SPINNING IT INTO YARN

MILL	PUBLISHED LYOCCELL CAPABILITY	NOTE
Lakshmi Mills	100% micro Tencel, Tencel / cotton blends, 30s–100s Ne	Combed and compact; single and doubled for knitting and weaving
Sutlej Textiles	Modal, lyocell and Tencel among its specialty yarn range	Value-added and dyed spun yarns
Others, on enquiry	Ring, compact, vortex and rotor lyocell and lyocell blends	Several Indian mills run lyocell programmes to order rather than as catalogue counts

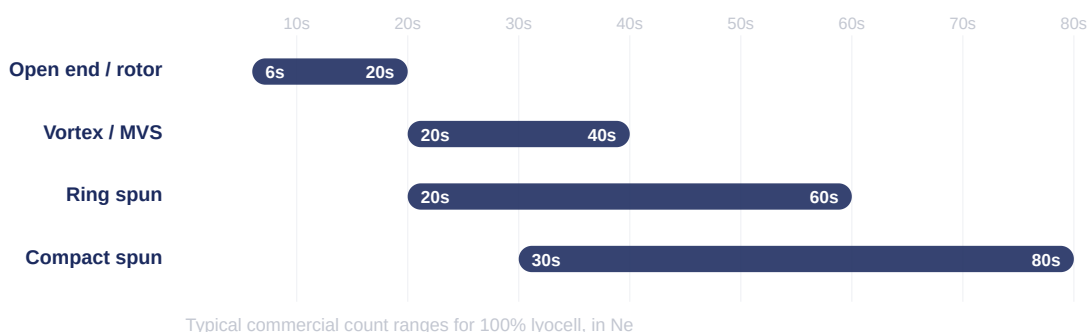
How to read this page. Fibre availability is no longer the hard part — matching a mill to your count, blend ratio and spinning system is. We maintain live capability mapping across our mill network and can identify, qualify and sample the right spinner for a lyocell or lyocell-blend programme.

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CHAPTER 07

100% lyocell yarn: spinning it right

Pure lyocell is the premium end of the range — the fabric that carries the drape, the lustre and the fibre story on the label. It is also the least forgiving to spin badly.



SPINNING SYSTEM	USUAL COUNT RANGE	WHERE IT FITS
Ring spun	20s – 60s Ne	Premium shirting, dresses, fine knits. Best strength and evenness; the reference quality.
Compact spun	30s – 80s Ne	Fine, low-hairiness fabrics with a clean surface and high lustre; export shirting and formal wear.
Vortex / MVS	20s – 40s Ne	An excellent fit — low hairiness, low pilling, high output; ideal for knits and athleisure.
Open end / rotor	6s – 20s Ne	Denim, heavy knits, home textiles and bottom weights at commercial cost.
Slub, fancy, core	Programme based	Character yarns for denim and casual wear; core-spun with elastane for stretch.

Fibre specification to order

- 1.2 / 1.4 dtex, 38 mm for ring and vortex
- 1.7 dtex, 51 mm for rotor and coarser counts
- Cross-linked A100-type grade where fibrillation must be suppressed
- Recycled-content grades where a circularity claim is needed

Preparatory discipline

- Gentle opening — lyocell does not need aggressive beating
- Controlled humidity in blowroom and card; the fibre is moisture sensitive
- Correct spin finish to manage static and neps
- Lower drafting tension than cotton at speed frame and ring frame

Wet processing — where the value is won or lost

Low-tension rope or soft-flow dyeing, controlled liquor ratio, reactive dyeing with correct alkali dosing, and a deliberate decision on fibrillation: enzyme-controlled for peach-touch and suede effects, or suppressed for a clean flat surface. Handled with care, lyocell delivers a hand no other cellulosic reaches.

CHAPTER 08

Blends: where the real volume is

Blending is how lyocell reaches commercial price points without losing the fibre story. A 50:50 lyocell-cotton yarn carries a credible sustainability claim at a fraction of the pure-fibre premium — and this is the segment growing fastest across Indian mills.

BLEND	COMMON RATIOS	WHAT IT DELIVERS	PRIMARY END USE
Lyocell / Cotton	50:50, 60:40, 70:30	Cotton's familiarity with lyocell's strength, drape and sheen; better wet strength than cotton alone	Shirting, denim, knits, casual wear
Lyocell / Polyester	50:50, 65:35	Durability, dimensional stability and cost control with a breathable, natural-feel surface	Uniforms, workwear, home textiles
Lyocell / Viscose	50:50, 70:30	Lifts viscose's weak wet strength and shrinkage at a moderate cost increase	Dress materials, ethnic wear, linings
Lyocell / Modal	50:50	Maximum softness and fluidity in an all-cellulosic construction	Innerwear, loungewear, premium knits
Lyocell / Linen	70:30, 55:45	Linen texture with far better softness, evenness and spinnability	Summer shirting, resort wear, jackets
Lyocell / Wool	70:30, 50:50	Lighter, cooler, better-draping suiting with moisture management	Suiting, blazers, transitional tailoring
Lyocell / Elastane	Core spun, 2–5%	Stretch and recovery behind a soft cellulosic surface	Stretch denim, leggings, fitted knits
Lyocell / Recycled PET	50:50, GRS	Two certifiable claims in one yarn — the strongest compliance package available	Brand sustainability and export lines
Lyocell / Bamboo	50:50, 60:40	All-cellulosic softness with antibacterial positioning	Innerwear, baby wear, towels



The commercial logic in one line. A buyer paying for a premium hand and a compliant fibre story rarely needs 100% lyocell to get it. A well-engineered 50% lyocell blend delivers most of the performance and most of the claim at a price the market will absorb at scale.

CHAPTER 09

Where lyocell is being used

The fibre started in premium apparel. It has since moved into denim, home textiles, hygiene and technical segments — each for a different property of the same fibre.



Apparel — woven

Shirting, dresses, blouses, skirts, resort and occasion wear. Bought for drape, lustre and the way the fabric moves. Cotton and linen blends carry the commercial volume.



Apparel — knits

T-shirts, polos, loungewear and jersey. Vortex and compact lyocell yarns give low pilling and a clean surface that survives repeated laundering.



Denim

One of the fastest-growing segments. Soft, fluid, lighter-weight denim with excellent indigo shade depth and less rigidity — ideal for women's and stretch programmes.



Activewear and athleisure

Moisture is absorbed into the fibre core and released, so fabric stays dry and low-odour without a chemical finish — the natural alternative to a full polyester construction.



Innerwear and sleepwear

A smooth round cross-section, high absorbency and a gentle surface make it a preferred next-to-skin fibre, including for sensitive and baby skin.



Home textiles

Bed linen, duvet covers, towels, curtains and upholstery. Temperature and moisture regulation are the selling points in premium bedding.



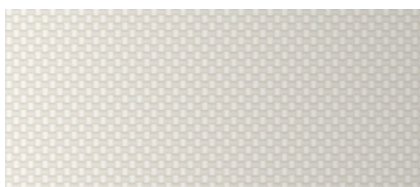
Nonwovens and hygiene

Wet wipes, facial masks, feminine hygiene and cosmetic pads — driven by biodegradability and the regulatory shift away from plastic-based wipes.

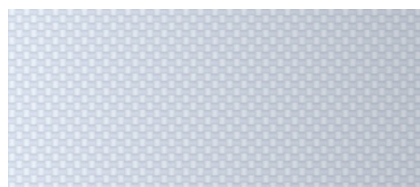


Medical and technical

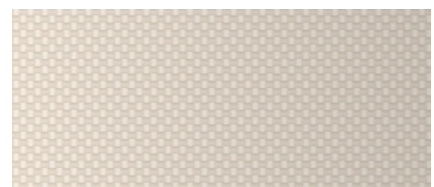
Wound dressings, swabs, surgical textiles, filtration media and automotive interiors, using the fibre's purity, absorbency and wet strength.



100% LYOCELL · SHIRTING



LYOCELL / COTTON · DENIM



LYOCELL / LINEN · SUMMER WOVEN

Segment to watch in India. Denim and home textiles. Both are Indian export strengths, both are under direct pressure from European buyers to change fibre mix, and both work commercially at lyocell *blend* ratios rather than pure lyocell. That combination is where the first large Indian volumes will land.

CHAPTER 10 • OUR VIEW

Lyocell and its blends are the future of the Indian textile market

This is not a fashion cycle. It is a regulatory and structural shift, and India sits on the right side of it — if the supply chain moves early.

01 The demand is regulated, not optional

European rules on textile waste, chemical management and product passports are turning fibre choice into a compliance requirement. Indian exporters will be asked for this fibre, not offered it.

03 Blends make it commercially real

Pure lyocell stays premium. Lyocell-cotton, lyocell-polyester and lyocell-viscose blends bring the fibre into mainstream price bands, which is how volume actually arrives.

05 The domestic market is premiumising

Indian consumers are paying for handle and comfort. Lyocell and its blends deliver a visible, touchable difference at retail — not just a certificate.

02 India already has the base

Pulp integration, a global top-tier MMCF producer, the world's second-largest spinning capacity and existing brand relationships. The missing piece is fibre volume — and that gap is closing.

04 It hedges both raw material risks

Cotton is exposed to crop, MSP and weather. Polyester is exposed to crude. Wood pulp sits outside both cycles and gives the mix a third, steadier leg.

What to be realistic about

Supply is concentrated with few producers, prices carry a premium over viscose, and mills need genuine process discipline. Early movers who solve the process side will hold the relationships.



HOW SHIVPRIYA TEXCHEM CAN HELP

Authorised agent and strategic partner to India's leading spinning mills since 2003, trusted by **2,500+ customers** across polyester, viscose, cotton, PC/PV, fancy and recycled yarns. For lyocell and lyocell-blend programmes we support mill identification and capability matching, count and blend development, sampling and trial lots, mill-direct commercial terms, and delivery through our pan-India network.

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