

SHIVPRIYA TEXCHEM · KNOWLEDGE SERIES

Recycled Polyester. The circular workhorse.

Bottles to flakes. Flakes to fibre. Fibre to the fastest-growing specification in global sourcing. A working guide to rPET — its process, its certifications and why every export programme now asks for it.

~90%

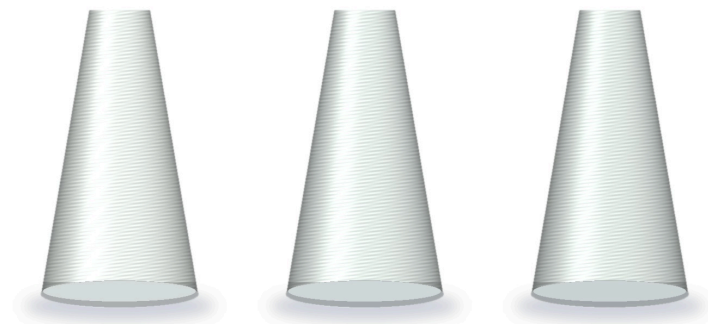
of India's collected PET bottles are recycled — among the world's highest rates

GRS

Global Recycled Standard — the certification that unlocks export orders

≈70%

lower carbon footprint vs virgin polyester by common LCA estimates



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

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CHAPTER 01

What exactly is recycled polyester?

rPET is polyester made from waste — overwhelmingly post-consumer PET bottles — instead of virgin PTA and MEG. Chemically it is the same PET; commercially it is a different product with its own certifications, price logic and buyers.

ROUTE / GRADE	SOURCE	WHAT IT SIGNIFIES
Mechanical rPET	Post-consumer bottles	Flakes melted to fibre; the volume route, quality tied to input
Chemical rPET	Bottles / textile waste	Depolymerised to monomer; virgin-equivalent quality, higher cost
rPSF	Bottle flake	Recycled staple for spun yarns and nonwovens
Recycled filament	Bottle chip	rPOY / rDTY / rFDY for knitting and weaving
Textile-to-textile	Garment waste	The frontier — regulation is pushing it from pilot to policy

Buyer's note. The certificate is the product. A GRS transaction certificate must follow every invoice through the chain — fibre to yarn to fabric to garment. A break anywhere voids the claim. Contract the paperwork as firmly as the fibre.

Raw material

Baled post-consumer PET bottles; increasingly textile waste.

Process

Sort, wash, flake, melt-spin (mechanical) or depolymerise (chemical).

Certifications

GRS and RCS chain-of-custody; OEKO-TEX® on the product.

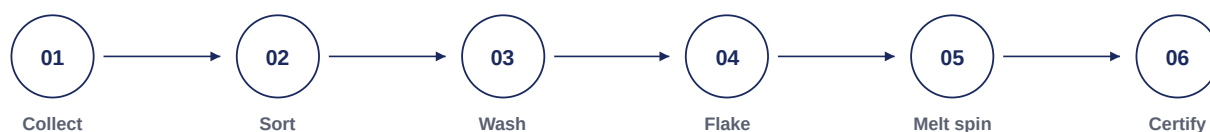
End of life

Recyclable again; not biodegradable.

CHAPTER 02

Bottle to fibre

Mechanical recycling is a cleaning and remelting exercise — simple in principle, unforgiving in practice. Input quality is destiny.



01 Collection and baling

India's kabadiwala network delivers among the world's highest bottle recovery rates into organised baling.

02 Sorting

Bottles are sorted by colour and polymer; PVC and label contamination are the quality killers.

03 Washing and flaking

Hot caustic washing strips labels, glue and residue; bottles are ground to clean flake.

04 Extrusion and filtration

Flake is melted and filtered; melt filtration fineness decides spinnability and yarn quality.

05 Spinning

rPSF is crimped and cut; recycled filament is spun and drawn as POY / FDY and textured to DTY.

06 Certification

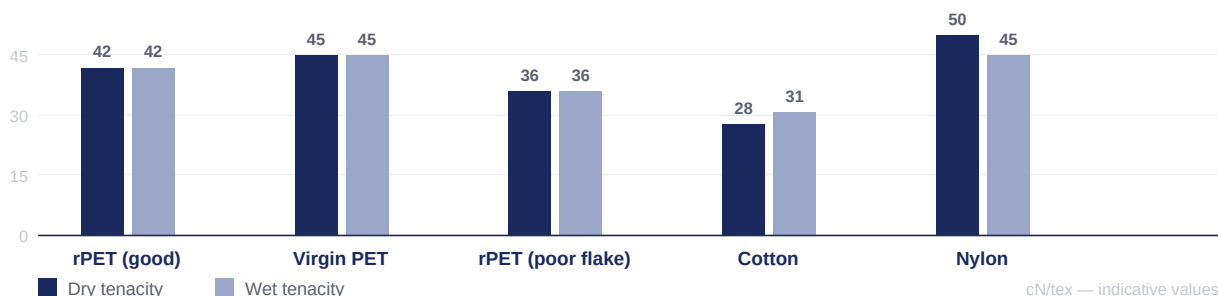
GRS scope and transaction certificates document recycled content through every hand-off.

PARAMETER	MECHANICAL RPET	CHEMICAL RPET
Quality	Good; tied to flake quality	Virgin-equivalent
Cost	Lower	Higher — energy and capex
Colour	Slight tint possible; dope-dye hides it	Water-white
Inputs	Clear bottle streams	Bottles and mixed textile waste

CHAPTER 03

What the fibre actually does

Well-made rPET performs within a whisker of virgin polyester — the differences are in consistency and colour, not in the datasheet.



PROPERTY	TYPICAL VALUE	COMMERCIAL MEANING
Tenacity	38–44 cN/tex	Marginally below virgin; ample for apparel and home
Consistency	Input-dependent	Flake quality and melt filtration decide evenness
Colour	Slight b* tint possible	Dope-dyed and dark shades neutralise it
Moisture regain	0.4%	Identical wicking, quick-dry behaviour to virgin
Dyeing	Disperse, 130°C	Same dyehouse practice as virgin polyester
Stability	Excellent	Heat-setting behaviour matches virgin
Carbon footprint	Materially lower	The purchasable sustainability claim
Recyclability	Repeatable	Mechanically recyclable again; chemistry closes the loop

Process caution for your mill. Qualify the recycler, not just the yarn. Ask for flake source, melt filtration specification and lot-to-lot Uster data. Poor rPET shows up as filtration pressure at their end — and as breaks and shade bands at yours.

CHAPTER 04

Recycled Polyester against the alternatives

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

PARAMETER	RPET	VIRGIN PET	COTTON	RCOTTON	LYOCELL
Strength	Very high	Very high	Medium	Lower	High
Sustainability claim	Certified recycled	None	Natural	Circular	Closed-loop
Price vs virgin	Par to premium	Base	Volatile	Discount	Premium
Consistency	Good, source-linked	Best	Bale-variable	Variable	Excellent
Certification	GRS / RCS	—	BCI / organic	GRS / RCS	FSC-based
Biodegradable	No	No	Yes	Yes	Yes
Regulatory tailwind	Strong	Headwind	Neutral	Strong	Strong

The honest trade-off

rPET inherits polyester's microplastic and non-biodegradability critique — recycling answers the resource question, not the shedding one. And bottle supply is finite: as demand grows, flake prices firm and rPET can price above virgin.

The direction of travel

Regulation is converting rPET from marketing to mandate: EU ecodesign rules, EPR schemes and brand commitments all specify recycled content. Textile-to-textile recycling is the next decade's build-out.

CHAPTER 05

India's recycling advantage

India's collection economics deliver bottle recovery rates most of the world cannot match — and a full domestic chain from flake to certified garment has grown on top of it.

THE SUPPLY BASE

Reliance

R|ELAN™

Recycled fibre and speciality grades within the largest Indian polyester system.

Ganesha Ecosphere

KANPUR · RPSF

Among India's largest dedicated PET recyclers into staple and filament.

JB Ecotex & peers

SURAT

A cluster of GRS-certified recyclers feeding the filament and spun value chain.

Certified spinners

GRS CHAIN

Spinning mills holding GRS scope certificates convert fibre into claimable yarn.

Brands committed publicly

Global sourcing targets for recycled content have hard dates — buyers must find certified supply.

India collects better

High recovery rates give Indian rPET a structural input-cost and story advantage.

GRS is the gateway

Certification, not price, is what opens export programmes; the chain must be complete.

Dope-dye pairs perfectly

Recycled + water-free colour is the strongest combined claim in value textiles.

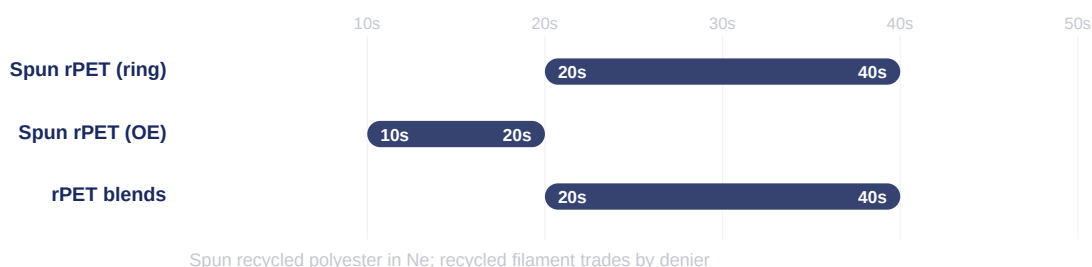
What this means for the yarn trade. The commercial skill in rPET is chain assembly: certified fibre, certified spinner, certificates flowing with every invoice. We map GRS-certified capability across our mill network and assemble compliant programmes end to end.

All company and brand names referenced are the property of their respective owners and are used for identification and informational purposes only; no affiliation or endorsement is implied unless stated.

CHAPTER 06

Recycled yarn: same machines, new paperwork

rPET spins and textures like virgin polyester. What changes is qualification, documentation and the buyer's audit trail.



YARN TYPE / SYSTEM	USUAL RANGE	WHERE IT FITS
rDTY	75D – 300D	Knitting and weaving with recycled claim
rFDY	50D – 150D	Bright recycled wovens and linings
rPSF spun	20s – 40s Ne	PC and 100% recycled spun yarns
Open end rPET	10s – 20s Ne	Economical recycled coarse counts
rPET / cotton	20s – 40s Ne	The double-story blend — recycled + natural

Specification to order

- GRS transaction certificate with every delivery — contractual
- Recycled content percentage stated (50% / 70% / 100%)
- Flake source and melt filtration data from the producer
- Dope-dyed options for shade-critical programmes

What decides quality

- Input flake cleanliness — PVC ppm is the killer metric
- Melt filtration fineness at extrusion
- Lot-to-lot Uster and dye-uptake consistency
- Certificate discipline through every processing stage

CHAPTER 07

Blends: stacking the claims

rPET blends carry two stories at once — recycled content plus the partner fibre's virtue. Buyers increasingly specify exactly this combination.

BLEND	COMMON RATIOS	WHAT IT DELIVERS	PRIMARY END USE
rPET / Cotton	65:35, 52:48	Workhorse PC economics with a recycled claim	Uniforms, shirting, workwear
rPET / rCotton	50:50	Fully recycled yarn — the maximum circularity claim	Denim, casualwear
rPET / Viscose	65:35	Recycled PV for value suiting	Trousers, uniforms
rPET / Lyocell	50:50	Recycled + closed-loop — the strongest compliance package	Brand sustainability lines
rPET / Elastane	95:5	Recycled performance stretch	Athleisure, leggings
rPET / Wool	55:45	Recycled suiting story	Corporatewear



The commercial logic in one line. Every blend polyester already dominates converts to rPET with paperwork rather than re-engineering — which is why recycled content is the fastest specification change in the market.

CHAPTER 08

Where recycled polyester is being used

rPET goes wherever virgin polyester goes — led by the categories where brand sourcing rules bite first.



Activewear

The flagship rPET category worldwide; performance plus story.



Corporate and uniforms

Institutional buyers adopt recycled PC for ESG procurement rules.



Denim

rPET weft and rPET-rCotton blends carry circularity into denim.



Home textiles

Recycled sheeting, curtains and filled products.



Value fashion

High-street basics converting to certified recycled content.



Bags and luggage

Recycled ATY and high-tenacity yarns in soft luggage.



Nonwovens

rPSF into geotextiles, insulation and wadding.

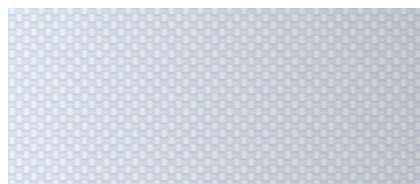


Fibrefill

Recycled hollow fibre for pillows, quilts and toys.



rPET DTY · ACTIVEWEAR



rPET / COTTON · UNIFORM



rPSF · FIBREFILL

Segment to watch in India. Textile-to-textile recycling. Bottle supply is finite; garment waste is not — and EU rules are about to make it a feedstock industry of its own.

CHAPTER 09 · OUR VIEW

Recycled content stops being optional

rPET is the rare fibre whose demand is written into regulation and brand policy. India's collection economics put it on the right side of that curve.

01 Regulation writes the demand

EU ecodesign, EPR and public procurement rules hard-code recycled content into orders.

02 India's input advantage is real

World-leading bottle recovery underwrites competitive, credible domestic rPET.

03 Certification is the moat

GRS chain discipline separates claimable yarn from grey-market fibre.

04 Dope-dye multiplies the story

Recycled + water-free colour answers two audits with one yarn.

05 Textile-to-textile is next

Chemical recycling of garment waste is the decade's capacity build — early relationships will matter.

What to be realistic about

rPET keeps polyester's microplastic critique, and flake prices can exceed virgin; the claim, not the cost, is what sells it.



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 recycled polyester and recycled polyester-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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