

SHIVPRIYA TEXCHEM · KNOWLEDGE SERIES

Core Spun.

The construction behind every stretch garment.

A core-spun yarn hides a filament or elastane core inside a sheath of staple fibre. The core provides strength or stretch; the sheath provides everything the wearer touches. Almost all stretch denim and comfort shirting depends on getting this right.

3–5%

typical elastane content by weight in a stretch denim yarn

3–4×

the draft the elastane core is stretched by during spinning

Grin

the defect that reveals a badly covered core

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

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CHAPTER 01

A yarn with two jobs

Core spinning feeds a continuous core into the ring frame at the front roller, where staple fibres wrap around it under twist. The result is one yarn doing two structurally separate jobs.



The core enters at the front roller — after drafting, before twist

01 The core is fed separately

An elastane or filament package sits above the frame with its own drive and tension control.

02 It is drafted

Elastane is stretched three to four times its relaxed length as it enters. The draft is the stretch.

03 It meets the staple ribbon

The core is introduced at the front roller nip, into the centre of the drafted fibre ribbon.

04 Twist wraps the sheath

Twist from the traveller wraps the staple fibres around the core along the full length.

05 The core is captured

When the yarn relaxes, the core contracts and the sheath crimps around it.

The core must stay centred. The entire construction depends on the core running down the **geometric centre** of the yarn. If it wanders to the surface it becomes visible, dyes differently and fails early — the defect known as grin-through.

CHAPTER 02

What goes inside

Core spinning is a family of yarns rather than one product. The core material determines what the yarn is for.

CORE	WHAT IT DELIVERS
Elastane (spandex)	Stretch and recovery. The dominant core in apparel — denim, shirting, knitwear
Polyester filament	Strength and dimensional stability without stretch. Used in sewing thread and workwear
Nylon filament	High tenacity and abrasion resistance for industrial and technical yarn
Aramid	Cut and heat resistance for protective clothing, with a comfortable staple sheath
Steel / conductive	Anti-static and technical function; the sheath keeps it wearable
Dual core	Elastane plus a filament — stretch with a recovery limit that prevents bagging

Dual core, and why denim uses it. Elastane alone gives stretch but allows the garment to bag out at knees and seat. Adding a second, non-elastic filament core sets a **recovery limit** — the fabric stretches to a point and then stops. That is why premium stretch denim is almost always dual core.

CHAPTER 03

What goes outside

The sheath is everything the wearer sees, feels and washes. Its fibre determines the entire character of the fabric, because the core is invisible if the yarn is made properly.

COMMON SHEATHS	SHEATH DECIDES	CORE DECIDES
Cotton	Handle	Stretch
Polyester	Dyeing route	Recovery
Viscose	Comfort	Strength
PC blends	Appearance	Durability

SHEATH FIBRE	COVERAGE	NOTES
Combed cotton	Very good	Long uniform fibre wraps cleanly. The standard for quality stretch denim
Carded cotton	Adequate	Short fibre gives less reliable coverage; grin risk is higher
Polyester staple	Very good	Uniform length gives consistent coverage and excellent dimensional stability
Viscose	Good	Smooth coverage and good drape, but lower wet strength in the sheath
Coarse or short fibre	Poor	Insufficient wrapping length; grin-through becomes very likely

CHAPTER 04

Grin-through and how it happens

Core spinning has one defining defect. Understanding its causes is most of what a buyer needs to know about the process.

01 The core migrates

Poor centring lets the core drift toward the surface, where it becomes exposed.

02 It shows in dyeing

Elastane does not take cotton dyes. Exposed core appears as white specks or a frosted line.

03 It weakens the yarn

An exposed core is unprotected against abrasion and breaks early in washing and wear.

04 It ruins stretch recovery

A broken core means that section of fabric no longer recovers — it bags permanently.

05 Causes are traceable

Core tension drift, wrong feed position, short sheath fibre, or insufficient twist.

06 It is not repairable

Grin-through cannot be corrected in finishing. The yarn must be right.

CAUSE

WHAT TO CHECK

Core tension variation

Elastane draft control and package unwinding consistency across the frame

Wrong feed position

Core entry point relative to the front roller nip — a small geometric error

Short sheath fibre

Fibre length and short fibre percentage in the sheath preparation

Insufficient twist

Twist multiplier too low to wrap the sheath firmly around the core

Elastane package ageing

Old or badly stored elastane unwinds unevenly and drifts in tension

CHAPTER 05

Handling the core material

Elastane is expensive, sensitive and unlike anything else in a spinning mill. Most core-spun quality problems begin with how it is stored and handled rather than with the spinning itself.

Storage

Temperature and humidity controlled. Elastane degrades and its unwinding behaviour changes with age.

Draft ratio

Typically three to four times. Sets the stretch level and must be identical across the frame.

Unwinding tension

Must stay constant as the package empties. Drift here becomes stretch variation in the fabric.

Break detection

A broken core produces ordinary yarn with no stretch, and it is invisible until the fabric.

The invisible failure. If the elastane breaks, the frame keeps spinning a perfectly good **non-stretch** yarn. It reaches the cone, the warp and the fabric, and appears as a stripe with no stretch. Core break detection is not optional equipment.

CHAPTER 06

Where core-spun yarn is used

Core spinning made comfort stretch a mass-market property. Its applications now extend well beyond apparel.

END USE	WHAT THE CORE PROVIDES
Stretch denim	The largest application by volume — dual core for stretch with controlled recovery
Comfort shirting	Two to three per cent elastane for ease of movement without a visibly stretchy fabric
Bottom-weight trousers	Stretch with recovery, so the garment holds shape through a full day
Knitted fabric	Core-spun in jersey and rib for shape retention in fitted garments
Sewing thread	Polyester filament core with a cotton sheath — strength inside, sewability outside
Protective clothing	Aramid or technical core carrying the function, staple sheath carrying the comfort

The sewing thread case. Core-spun sewing thread is a quietly brilliant construction. The **polyester core carries the strength**; the **cotton sheath resists needle heat** and lubricates the stitch. Neither fibre alone would make an acceptable thread for high-speed sewing.

CHAPTER 07

Designing with stretch

Stretch yarn changes fabric behaviour throughout weaving, dyeing and finishing. It cannot simply be substituted into an existing construction.

01 Width shrinks dramatically

A stretch weft fabric contracts sharply off the loom. Loom width must be planned for it.

03 Heat destroys elastane

Excessive finishing temperature degrades the core permanently and irreversibly.

05 Chlorine damages elastane

Bleach and pool water degrade standard elastane; chlorine-resistant grades exist and cost more.

02 Weft stretch is the norm

Most apparel stretch is in the weft only. Bi-stretch fabric is a different and harder proposition.

04 Recovery must be tested

Stretch percentage alone is meaningless. Growth after extension is the number that matters.

06 Sewing needs care

Stretch fabric requires appropriate needles, thread and seam construction to avoid puckering.

Stretch percentage sells the fabric. **Recovery percentage** determines whether the customer buys it again.

CHAPTER 08

Testing core-spun yarn

Standard yarn tests will not reveal the properties that matter here. Core-spun yarn needs its own test set.

TEST	WHAT IT REVEALS
Core content %	Verifies the elastane proportion actually delivered against what was ordered
Stretch and recovery	Both figures. Recovery is the one that predicts garment performance
Core centring	Cross-section examination under magnification. The direct check for grin risk
Dyed appearance	Dye a sample. Exposed core appears immediately as white specks or frosting
Core continuity	Long lengths tested for breaks. A broken core is invisible on the cone
Abrasion after wash	Whether the sheath holds the core through repeated laundering

The dye test again. Knit or weave a sample and dye it. **Grin-through, core breaks and stretch variation all appear at once** in a dyed sample and none of them appear on an undyed cone. It is the single most efficient test for this yarn.

CHAPTER 09

Buying core-spun yarn

Core-spun yarn carries more ways to go quietly wrong than any other spun yarn. The specification should be correspondingly precise.

01 Specify core type and content

Material, denier and percentage by weight. Single core or dual core, stated explicitly.

02 Give stretch and recovery targets

Both numbers, measured on fabric rather than on yarn, with the test method named.

03 Require core-break detection

Ask how the mill detects and stops a broken core. This is the defining quality question.

04 Ask about elastane storage

Conditions and stock age. Poorly stored elastane creates problems no setting can fix.

05 Request a dyed sample

From the delivered lot, before bulk. Grin-through shows nowhere else.

06 Confirm finishing limits

Maximum temperature the core tolerates, and pass it to your processing house in writing.

How Shivpriya reads it. We qualify core-spun mills on **core-break detection and elastane handling discipline** before we look at price. Both defects reach the customer as a garment that has lost its stretch after ten washes — the most damaging complaint in the category.

IN CLOSING

One yarn. Two separate jobs.

Core spinning is the construction that made comfort stretch ordinary, and it is unforgiving of small process errors that stay invisible until the garment is worn. If you are developing a stretch programme, talk to us — we will start with recovery rather than stretch, because recovery is what your customer will judge you on.

TALK TO US

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