

SHIVPRIYA TEXCHEM · KNOWLEDGE SERIES

Texturised (DTY). Turning flat filament into fabric.

Polyester leaves the spinning line as a smooth, dead, glassy filament that no one wants to wear. Draw texturing gives it crimp, bulk and stretch — and turns a chemical product into a textile one. This is the process and how to read a DTY quotation.

POY → DTY

the conversion that underpins the entire man-made fabric trade

~1000 m/min

typical texturing speed on modern machines

D/Y

the disc-to-yarn speed ratio that governs the whole process

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CHAPTER 01

Why flat filament will not do

A continuous filament yarn straight from the melt-spinning line is smooth, straight and parallel. It has none of the properties that make a staple yarn comfortable, and texturising exists entirely to put them back.

PROPERTY	FLAT FILAMENT	TEXTURED FILAMENT
Surface	Smooth and glassy	Crimped, matt, textile-like
Bulk	Very low	High — the filaments separate and occupy volume
Stretch	Almost none	Substantial, and recoverable
Handle	Cold, slippery, dead	Warm, dry, with body
Cover	Poor	Good — fewer filaments cover more fabric area
Moisture transport	Poor	Improved by capillary channels between crimped filaments

Melt spinning makes a polymer thread. Texturising makes it **a textile**. The two are separate industries for a reason.

CHAPTER 02

Draw texturising, step by step

Draw texturising does two things at once: it draws the partially oriented yarn to its final denier, and it sets a permanent crimp into each filament. Both happen in a single continuous pass.



Twist is inserted, heat-set, then removed — the crimp is what remains

01 POY feed

Partially oriented yarn is fed from the melt-spinning package. It is not yet at final denier.

03 Primary heating

Heated above its glass transition so the polymer can be deformed and reset permanently.

05 False twist

Friction discs insert a very high twist. Above the disc unit it unwinds again — but the crimp is set.

02 Drawing

The yarn is stretched between rollers, orienting the polymer chains and reducing denier to target.

04 Cooling

A cooling plate brings the yarn below transition while it is still held in the twisted state.

06 Secondary heating

An optional second heater relaxes the yarn, producing set or semi-set quality.

The false twist principle. Twist is inserted below the disc unit and removed above it — the yarn is untwisted when it reaches the winder. What survives is the **deformation heat-set into each individual filament** while it was held twisted.

CHAPTER 03

The settings that decide quality

DTY quality lives in a small number of tightly interacting variables. Changing one to correct a symptom almost always shifts another, which is why texturing is an experienced operator's job.

D/Y ratio

Disc surface speed against yarn speed. The master variable — it sets twist level and crimp intensity.

Draw ratio

Determines final denier and tenacity. Fixed by the POY denier and the target DTY denier.

Primary heater temperature

Must exceed glass transition without degrading the polymer. Narrow usable window.

Secondary heater

Present and heated gives set yarn; bypassed gives semi-set. This decides the handle.

SYMPTOM

USUALLY MEANS

Low crimp, flat yarn

D/Y ratio too low, or primary heater below the required temperature

Broken filaments

D/Y too high, worn discs, or the draw ratio pushed beyond the polymer

Tight spots / snarls

Insufficient relaxation — the secondary heater setting needs correcting

Dyeing streaks in fabric

Uneven draw or heater variation between positions on the machine

Barré across the fabric

Mixed POY lots, or drifting settings between machine sides

Variable elongation

Inconsistent POY input quality reaching the texturing line

CHAPTER 04

Reading a DTY quotation

A DTY specification is a compact string of numbers and abbreviations. Each element changes the fabric materially, and most buying mistakes come from ignoring one of them.

ELEMENT	WHAT IT CONTROLS
Denier	Yarn linear density. The headline number and the basis of pricing
Filament count	How many filaments make up that denier. The single biggest influence on handle
Lustre	Bright, semi-dull or full-dull, set by titanium dioxide content in the polymer
Intermingle	Air-entangled nodes holding the filaments together. Stated as nips per metre
Set level	Set or semi-set, depending on secondary heater use. Governs shrinkage and handle
Colour	Raw white, dope dyed or optical white — dope dyed cannot be shade-corrected later

Denier per filament is the real number. 150/48 and 150/144 are both 150 denier and produce completely different fabrics. **Denier divided by filament count** tells you the fineness of each individual filament — and that is what the hand actually feels. Always ask for both figures.

CHAPTER 05

The DTY family

Texturising equipment can be configured to produce several distinct yarn types from the same basic POY input. They are priced and used differently.

TYPE	WHAT IT IS
Set DTY	Secondary heater engaged. Low residual shrinkage, softer handle, stable in finishing
Semi-set DTY	Secondary heater bypassed. More stretch and bulk, higher shrinkage, livelier
High-stretch DTY	Maximum crimp retention for stretch fabric and elastic applications
Intermingled DTY	Air nodes hold the bundle together so it runs without sizing or twisting
Dope-dyed DTY	Pigment added in the melt. Excellent fastness, no dyeing stage, no shade correction possible
Micro DTY	Very fine denier per filament, giving a peach-skin handle and dense fabric cover

- **Cationic DTY** accepts basic dyes, enabling two-tone effects when woven with regular polyester.
- **Trilobal DTY** uses a shaped cross-section for a silk-like lustre in furnishing and saree fabric.
- **Recycled DTY** is texturised from rPET POY, and requires GRS documentation through the whole chain.

CHAPTER 06

Where DTY goes

DTY is the workhorse of Indian man-made fabric. Its versatility across knitting, weaving and technical use is the reason texturising capacity clusters where fabric capacity does.

END USE	WHAT DTY PROVIDES
Saree & dress fabric	Drape, cover and lustre at a price point the volume market requires
Knitted fabric	Stretch, bulk and recovery in sportswear, loungewear and lining
Suiting & shirting	Blended with viscose or cotton for wrinkle recovery and dimensional stability
Home furnishing	Bulk and cover in curtains, upholstery and made-ups
Warp knitting	Fine, uniform, intermingled yarn for tricot and raschel constructions
Technical textiles	Controlled shrinkage and defined mechanical properties for engineered fabric

The Surat connection. India's texturising capacity is heavily concentrated around Surat, sitting directly beside the powerloom and fabric market it feeds. **POY price, texturising cost and grey fabric price move together there** — which is why the whole man-made chain watches that market.

CHAPTER 07

Testing DTY properly

Most DTY complaints appear as fabric faults rather than yarn faults, which makes upstream testing worth the trouble.

TEST	WHAT IT TELLS YOU
Denier and its CV	Basic conformance, and whether positions on the machine are running consistently
Tenacity and elongation	Whether the draw ratio was correct and the polymer was not degraded
Crimp contraction	The direct measure of texturing effectiveness — the number that matters most
Boiling water shrinkage	Predicts dimensional behaviour in dyeing and finishing
Intermingle nips per metre	Whether the yarn will run without sizing on your machine
Dye uptake uniformity	A knitted or woven tube dyed as one piece reveals barré before bulk production does

The tube test. Knit a sample tube from the delivered lot and dye it in one bath. **Any variation between positions, packages or lots appears immediately as a stripe.** No instrument test is as decisive, and it takes a day.

CHAPTER 08

How DTY is priced

DTY pricing is transparent and volatile. It tracks POY, which tracks PTA and MEG, which track crude. Understanding the chain helps you time and structure a purchase.



Each step adds conversion cost — and each has its own margin cycle

01 POY is the base

DTY price is POY plus texturing conversion. That conversion margin is where texturisers compete.

02 Conversion cost

Power, labour and machine depreciation. Modern high-speed machines have a structural advantage.

03 Denier affects margin

Fine denier and high filament counts run slower and carry a higher conversion charge.

04 Specialty premium

Dope dyed, cationic, micro and recycled all command a premium over regular DTY.

05 Volatility

POY moves with crude. Long fixed-price contracts carry real risk in both directions.

06 Certification

GRS-certified recycled DTY carries a premium tied to documentation, not to fibre performance.

CHAPTER 09

Buying DTY well

DTY is bought in large volumes on thin margins, which makes specification discipline more valuable here than almost anywhere else in the chain.

01 Specify the full string

Denier, filament count, lustre, intermingle, set level and colour. All six, every time.

02 Check denier per filament

Divide denier by filament count. This is the number that decides how the fabric will feel.

03 Confirm set or semi-set

Shrinkage behaviour in your dyeing and finishing depends on it directly.

04 Ask for crimp contraction

The clearest single indicator that texturising was done properly on that lot.

05 Run a dye tube

Before bulk. Barré is invisible on the cone and unmissable in the fabric.

06 Match lots per fabric

Never mix DTY lots within one fabric run unless you have dye-tested them together.

How Shivpriya reads it. We buy DTY on **dye uniformity across positions**, not on the denier certificate. A texturiser with tight machine-to-machine control delivers fabric that dyes the same in month one and month twelve — and that consistency is worth more than a rupee on the price.

IN CLOSING

A glassy thread in. A textile out.

Draw texturing is the step that made polyester wearable, and it remains the most economically sensitive conversion in the man-made chain. If you are specifying DTY for a fabric programme, talk to us — start with denier per filament and the set level, because those two decide the hand before price ever enters the conversation.

TALK TO US

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