

SHIVPRIYA TEXCHEM · KNOWLEDGE SERIES

Air Texturised (ATY). A spun hand from continuous filament.

Air texturising uses no heat and no twist. A cold jet of turbulent air throws loops onto the filament surface, and those loops give continuous filament yarn the look, feel and cover of a spun staple yarn — without ever cutting a fibre.

Cold

no heat setting — the loops are mechanical,
not thermal

Overfeed

the single variable that governs loop density
and bulk

Spun-like

the handle it delivers, at filament economics

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

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CHAPTER 01

Loops instead of crimp

DTY sets a crimp into each filament with heat. ATY does something structurally different: it feeds filament faster than it takes it away, and blows the surplus into permanent loops with turbulent air.



Feed speed exceeds delivery speed — the surplus length becomes surface loops

01 Overfeed

Filament is fed into the jet faster than it leaves. The excess has to go somewhere.

02 Wetting

A water applicator reduces inter-filament friction so individual filaments can separate freely.

03 Turbulent air

A cold compressed-air jet creates a chaotic zone that separates and displaces filaments.

04 Loop formation

Individual filaments buckle outward into loops of varying size along the yarn surface.

05 Entanglement locks them

Loops interlock mechanically with the core bundle and become permanent without heat.

06 Stabilising

A drawing or stabilising zone fixes the structure so it survives downstream processing.

No heat, no twist. ATY is a purely **mechanical** texturing process. That is why it works on fibres that cannot be heat set, and why its bulk is dimensionally stable — there is no thermal memory waiting to relax.

CHAPTER 02

ATY against DTY

Both are called textured yarn and they are not substitutes. The mechanisms are different and so are the fabrics they produce.

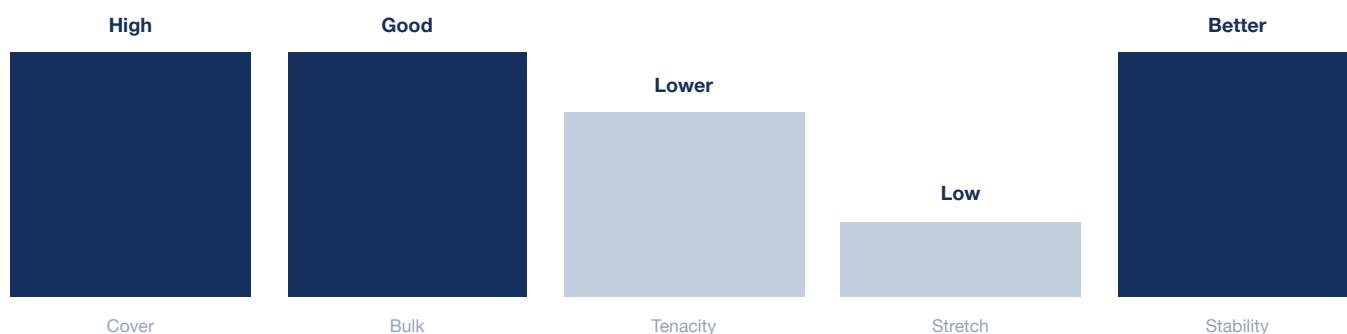
	DTY	ATY
Mechanism	Heat-set crimp per filament	Mechanically formed surface loops
Heat used	Yes — essential	No
Stretch	High and recoverable	Low — this is not a stretch yarn
Bulk	From filament crimp	From surface loops
Handle	Soft, elastic, springy	Dry, spun-like, with body
Speed	Faster	Slower and more air-hungry

DTY makes filament **stretchy**. ATY makes filament **look like staple**. Those are different commercial problems.

CHAPTER 03

What the loops deliver

The loop structure changes surface behaviour, cover and handle without changing the fact that every filament still runs continuously through the yarn.



ATY against a comparable DTY of the same denier

PROPERTY	PRACTICAL CONSEQUENCE
Spun-like appearance	Fabric reads as staple yarn without the pilling and shedding that staple brings
Excellent cover	Loops occupy volume — fewer grams cover the same fabric area
No pilling	Loops are continuous filament and cannot break free to form a pill
No shedding	No fibre ends means no lint, which matters in cleanroom and technical fabrics
Dimensional stability	No thermal memory to relax, so the fabric holds its dimensions well
Lower tenacity	Looped filaments do not share load evenly; strength is below flat filament

CHAPTER 04

What the operator adjusts

ATY has a small control set with strong effects. Overfeed dominates, and everything else modifies what overfeed has already decided.

Overfeed ratio

The master variable. More overfeed means more loops, more bulk, lower strength.

Air pressure

Sets turbulence intensity. Too low and loops do not form; too high and filaments break.

Wetting rate

Controls inter-filament friction. Under-wetting is the commonest cause of poor loop formation.

Jet geometry

Nozzle design and wear determine loop size distribution and consistency.

SYMPTOM

USUALLY MEANS

Flat yarn, no bulk

Overfeed too low, or insufficient wetting for filaments to separate

Broken filaments

Air pressure too high, or a worn jet producing local turbulence spikes

Irregular loop size

Jet wear, or unstable air supply pressure across the machine

Yarn too weak

Overfeed pushed beyond the point where the core can still carry load

Loops pulling out

Insufficient entanglement — stabilising zone settings need correcting

Streaky fabric

Position-to-position variation in air pressure or wetting

CHAPTER 05

Where ATY belongs

ATY is chosen where a fabric should look and feel like a staple-spun fabric but must not shed, pill or lose dimensional stability.

END USE	WHY ATY FITS
Upholstery fabric	Spun appearance with high abrasion resistance and no pilling under repeated use
Curtain & drapery	Excellent cover and a matt, textile surface, dimensionally stable over long drops
Automotive interior	No shedding, high abrasion resistance, and stability under heat and sunlight
Outdoor & awning	Filament durability with a fabric-like surface that does not degrade into fibres
Technical fabric	Controlled surface with no lint — important in filtration and cleanroom applications
Bottom-weight apparel	Spun-like handle at filament economics, without staple pilling

- **Poor fit:** stretch fabrics — ATY has very little recoverable extension.
- **Poor fit:** soft next-to-skin knitwear, where the dry, firm handle is not wanted.
- **Poor fit:** high-tenacity warp applications, given the strength loss from looping.

CHAPTER 06

Core-and-effect ATY

The most commercially interesting ATY yarns feed two components at different overfeeds. One forms a stable core; the other becomes almost pure surface loop.

CONSTRUCTION	WHAT IT PRODUCES
Single component	Uniform loop structure. The simplest and most economical ATY
Core and effect	Low-overfeed core for strength, high-overfeed effect yarn for surface — the workhorse construction
Parallel ATY	Two components at equal overfeed for a balanced, uniform surface
ATY with staple	Filament core with staple effect for a genuinely spun appearance
Mixed shrinkage	Components with different shrinkage develop additional bulk in finishing
Mixed lustre	Bright and dull components in one yarn produce a subtle two-tone surface

Why core-and-effect dominates. A single-component ATY has to compromise between strength and bulk. Splitting the roles lets the core carry the load while the effect yarn is pushed hard for surface — **you stop trading one against the other.**

CHAPTER 07

The cost of air

ATY is slower and more air-intensive than DTY. It survives because it reaches markets DTY cannot serve, not because it is cheaper.

01 Compressed air

The dominant running cost, and it is continuous. Air system efficiency is the conversion cost.

03 Overfeed waste

The overfed length is consumed by the loops — material input exceeds yarn output.

05 Yarn realisation

Commands a premium in furnishing, automotive and technical markets.

02 Production speed

Slower than draw texturing, which raises cost per kilo.

04 Jet consumables

Jets wear and must be replaced on schedule. Worn jets degrade quality invisibly.

06 Substitution value

Competes against spun yarn, not against DTY — and wins on pilling and shedding.

Compare it to staple. The right benchmark for ATY is not DTY — it is **a spun staple yarn of similar appearance**. Against that comparison ATY offers no pilling, no shedding and better dimensional stability, and the premium becomes defensible.

CHAPTER 08

Testing ATY

Standard filament yarn tests miss what matters in ATY. Loop stability and appearance uniformity are the properties that actually decide acceptance.

TEST	WHAT IT TELLS YOU
Loop stability	Whether loops survive tension in warping, weaving and finishing without pulling out
Bulk / cover factor	The commercial property being bought. Measure it, do not assume it
Tenacity and elongation	Confirms the core is intact and overfeed has not been pushed too far
Denier and its CV	Position-to-position consistency across the machine
Appearance board	Wind the yarn onto a black board. Loop irregularity is immediately visible
Abrasion on fabric	The decisive test for furnishing and automotive acceptance

The board test. Wrap the yarn evenly on a black board under consistent tension. **Loop size variation, thin zones and jet drift all appear at a glance** — faster and more revealing than any instrument for this yarn.

CHAPTER 09

Buying ATY

ATY is usually bought into a specific fabric construction, and the specification should reflect the fabric rather than the yarn alone.

01 State the construction

Single component or core-and-effect, with the denier of each component.

02 Specify the bulk target

Bulk or cover factor is what you are buying. Put a number on it.

03 Require loop stability data

Loops that pull out in warping become a fabric fault you cannot correct.

04 Confirm jet maintenance

Ask about the jet replacement schedule. Worn jets are the main cause of drift.

05 Run an appearance board

On arrival, on the delivered lot. It takes minutes and catches most problems.

06 Test on the real fabric

Abrasion and appearance on your own construction, not on the supplier's sample.

How Shivpriya reads it. We qualify ATY on **loop stability through warping**, because that is where a weak ATY fails and where the failure is most expensive. A yarn that survives your warping survives everything after it.

IN CLOSING

No heat. No twist. Just air and geometry.

Air texturing is the quiet specialist of the filament world — it gives furnishing, automotive and technical fabrics a textile surface that will not pill, shed or move. If you are choosing between ATY and a spun yarn for a furnishing or technical construction, talk to us and we will compare them where it counts, on abrasion and appearance retention.

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