



-Radyarn®- Stretch

PBT YARN

Radyarn® Stretch is the PBT yarn by Noyfil SpA, a company belonging to the Fibres area of RadiciGroup. PBT yarn takes full advantage of the special properties of polybutylene terephthalate (PBT) fibre.

The characteristics of this yarn make it perfect for manufacturing **highly comfortable garments**.

Freedom of motion and total comfort are the features users appreciate most since they want to feel protected but not constricted. With this new yarn it is possible to produce garments capable of maintaining a comfortable microclimate around the body.

The fibre is **elastic, soft and resistant** and takes dye well, even when blended with other types of fibres. Colour fastness is guaranteed for all types of usages, especially wet fastness, perspiration fastness, and decolouration resistance.

This elastic non-elastomeric yarn has high extensibility and excellent elastic recovery. It acquires these characteristics as a result of a bulking process that is three-dimensional, not only linear as it happens for ordinary elastic yarn.

Radyarn® Stretch is a textile yarn in all respects: it is dyeable, has good coverage because it is a textured multifilament yarn, ductile and elastic. It is also thermoplastic and, as such, can be used to manufacture stabilized fabrics. This fibre does not compete directly with elastomeric yarn, but it is meant to be used for new textile products.



Comparison of PET, PA 6, PA 6.6 and PBT bulked yarn properties (e.g. dtex 78)

| YARN | POLYESTER | POLYAMIDE 6 | POLYAMIDE 6.6 | PBT |
|-----------------|-----------|-------------|---------------|-----|
| Crimp Rigidity | 42 | 56 | 56 | 58 |
| Crimp Module | 28 | 33 | 33 | 44 |
| Crimp Stability | 83 | 98 | 98 | 96 |
| Tenacity | ≥30 | ≥33 | ≥33 | ≥27 |
| Elongation% | ≥25 | ≥30 | ≥30 | ≥25 |

Fabrics made with this fibre, even when the PBT content does not exceed 30 to 35%, turn out to be ideal for making highly wearable, comfortable, body - moulding garments. The results that can be achieved using PBT for men's, women's and children's garments - for both classic and sportswear - were unthinkable until today. Because of low PBT water absorption (about 0.4% of H₂O), the excellent elasticity of PBT fabrics is unaffected by moisture.



PBT yarn properties and related characteristics of PBT fabrics

| PROPERTIES | DERIVED CHARACTERISTICS |
|----------------------|--|
| Thermoplasticity | <ul style="list-style-type: none">• Dimensional stability (For both flat and elastic fabrics) |
| Elastic recovery | <ul style="list-style-type: none">• Good elongation• Prompt recovery• Low residual deformation |
| Ductility | <ul style="list-style-type: none">• Good processability |
| Low water absorption | <ul style="list-style-type: none">• Fast Drying• Reduced weight of wet fabric |
| Bulkiness | <ul style="list-style-type: none">• Envelops but does not constrict |

PBT is creating interest among stretch fabric producers, who have noticed the remarkable performance advantages of PBT fabrics, their potentially excellent results from an aesthetic standpoint, and the ease of making garments.

The most appreciated stretch fabric features:

- ⊙ SUPERIOR COMFORT AND MOULDABILITY
- ⊙ SUPERIOR SHAPE RETENTION, ALSO FOR MODERATELY ELASTIC FABRIC
(less "sagging" with only approx. 5% PBT content)
- ⊙ HIGH WRINKLE RESISTANCE

The two main stretch fabric categories:

- ⊙ "COMFORT STRETCH" fabric, with maximum allowable deformation no greater than 30% and elastic recovery loss not exceeding 2 to 3%.
- ⊙ "POWER STRETCH" fabric, with allowable deformation from 30 to 50%, and elastic recovery loss not exceeding 5 to 6%.

By blending PBT yarns with other synthetic or natural filaments or yarns, it is possible to obtain embossed or wavy effects, while still maintaining the degree of elasticity needed for the finishing processing.

The finishing treatment, which comprises scouring, dyeing and heat-setting, is crucial in that this is the stage during which the degree of elasticity and the intensity of the effects in the fabric are controlled.



Main PBT applications for Radyarn® Stretch

- ⊙ WEAVING
- ⊙ RASCHEL LACE
- ⊙ CIRCULAR KNITTING
- ⊙ HOSIERY
- ⊙ WARP LACES
- ⊙ FANTASY YARN

PBT ADVANTAGES

CHARACTERISTICS

- ⊙ SOFT AND SILKY HAND
- ⊙ EXCELLENT WEARABILITY
- ⊙ WEAR COMFORT
- ⊙ PERMANENT ELASTIC PROPERTIES
- ⊙ RESISTANT SEAM

AVAILABILITY

Radyarn® Stretch yarns are available as textured on **knitting beams**, and textured raw white and dope-dyed on **spools** for circular knitting and fancy yarns.

Our **Radyarn® Stretch** yarns are also available as follows:



| TECHNICAL SPECIFICATIONS | | | | | | | | | | | | | |
|--------------------------|-----------------------------|--------------------|------------------------|---------------|----------|---------|----------|-----------|--------|-----------|-----------|---------------|---------------------|
| ADDITIVES | | | | CROSS SECTION | | | LUSTER | | | DPF | | | |
| BACTERIOSTATIC "feel" | STABILIZED UV "UV guard" | TRACING "trace" | UV PROTECTION "UVP" | ROUND | TRILOBAL | SPECIAL | SEMIDULL | FULL DULL | BRIGHT | DOPE DYED | YARN DYED | MICRO 0.6 DPF | SUPER MICRO 0.3 DPF |
| ● | | | | ● | | | ● | | ● | ● | | | |



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