



T. SILK®.
THE SILK YOU
WEREN'T EXPECTING.



HIGH
PERFORMANCE
NATURAL
PADDING





T.Silk[®]

THERMO SETA

High
performance
natural
padding

PATENTED

T.SILK®, INSPIRED BY NATURE, PERFECTED BY TECHNOLOGY.

Through a long process of evolution, nature developed the perfect material for protecting a small insect during the vulnerable phase of metamorphosis. A silk cocoon provides warmth, insulation and protection while being incredibly light and breathable. Humans have used silk since ancient times. In more recent times, it took the passion and experience of three generations who have made silk their life to transform an intuition that it could still be improved into a product.



The result is Thermal Silk, the most natural yet sophisticated textile imaginable. Ideal for household fabrics and outdoor clothing, both elegant and technical, it ensures maximum comfort under all environmental conditions, even the most extreme.

Hypoallergenic and perfectly compatible with our skin, it traps heat but is also breathable for unrivaled comfort.

MORE SILK THAN SILK ITSELF.

The technology used to develop T.Silk® has further improved the properties of the fiber, creating a material with more available fibers and a density that can be varied to suit a range of uses.

This has been achieved thanks to know-how and a processing technique that was developed over the years based on chemical and physical analysis of the silk fiber.



SILK: A RAW MATERIAL LIKE NO OTHER.

Silk has extraordinary intrinsic properties:

Insulation

Silk fibers have a very low thermal conductivity coefficient. The large amount of air trapped in the fibers provides exceptional thermal insulation.

Lightness

Silk is the lightest of the natural fibers.

Hygroscopicity

Silk's high capacity to absorb and retain water is far superior to that of other fibers such as cotton, cellulose acetate, polyester and nylon.

Tenacity

The elongation at break of degummed silk falls in the range of 15-35%, significantly higher than that for cotton and Kevlar, and comparable to that of nylon. A silk fiber is approximately five times stronger than a steel fiber of the same weight. Furthermore, the yield strength (stress at which material permanently deforms) and breaking

strength of silk are very close meaning that silk fibers can bear loads very close to their breaking point without being compromised: silk has a high ability to absorb sudden loads without strain.

Resistance to bending

Under repeated bending, silk fibers exhibit a resistance between those of wool and cotton.

Resistance to twisting

Similar on the average to wool and cotton.

Elasticity

When stretched by up to 2%, silk shows full elastic recovery when the load is removed. Silk fibers are completely elastic.

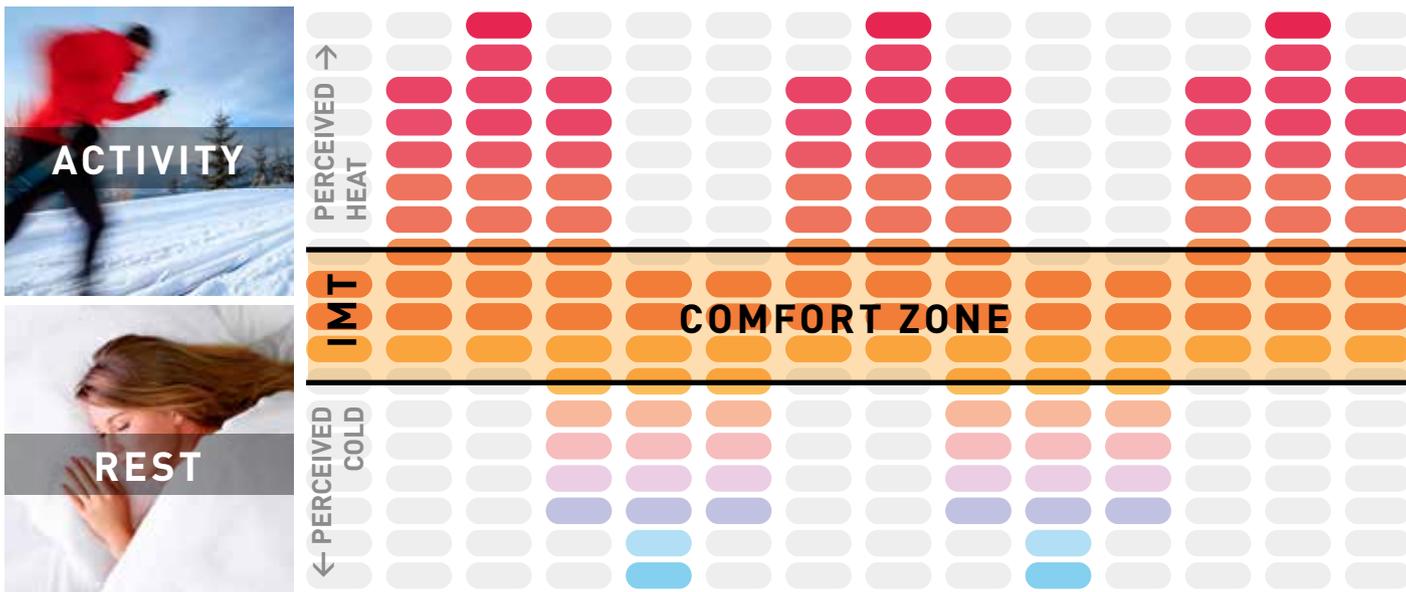
Other characteristics

Heat resistance: silk can withstand temperatures as high as 140°C for prolonged periods; it decomposes at 171°C.

Silk fibers are highly crease resistant thanks to their resiliency and ability to recover from other types of deformation.

	Elongation at break (%)	Modulus (n/m ²)	Tenacity (N/m ²)	Breakage energy (J/kg)
<i>Seta-Bombyx</i>	15-35	5x10 ⁹	6x10 ⁸	6x10 ⁴
Nylon	18-26	3x10 ⁹	5x10 ⁸	8x10 ⁴
Cotton	5,6-7,1	6-11x10 ⁹	3-7x10 ⁸	5-15x10 ³
Kevlar®	4	1x10 ¹¹	4x10 ⁹	3x10 ⁴
Steel	8	1x10 ¹¹	4x10 ⁹	2x10 ³

Chemical, physical and mechanical properties



T.Silk® maintains a constant ideal perceived temperature (Comfort Zone).

JUST THE WARMTH YOU NEED.

Unparalleled comfort: thanks to its excellent thermoregulation properties, T.Silk® helps the body remain within the comfort zone. In addition to being a completely natural product that is totally compatible for contact with human skin, T.Silk® is exceptional in having an incredible correlation

between resistance to conductive heat transfer (Thermal Resistance – RCT) and resistance to evaporative heat loss (Evaporative Resistance – RET). T.Silk® is a bona fide thermal plant that ensures a high level of heat retention without excessive accumulation: excess heat is quickly released to the environment without water vapor (sweat) absorption. This means that the insulating layer will not be the principal cause of a rise in

body temperature and of additional sweating (a behavior often found in commonly available synthetic and natural fibers). Used as an insulating layer in clothing or home linens, regardless of environmental conditions and physical activity (exercise/sleep), T.Silk® breaks the vicious circle of sweating-cooling-sweating that prevents our bodies from maintaining thermal equilibrium.



Intrinsic Water-Vapor Permeability Index (IMT) *

	IMT
T.Silk®	0,84
Wool	0,36
Polypropylene	0,49
Artificial microfibers	0,55
Cotton	0,43

*(the thermal-physiological comfort index or IMT is determined by the relation between RCT and RET – according to the Skin Model analysis method, UNI EN ISO 31092:1996 and ASTM F1868)

ALL THE WARMTH OF SILK.

The characteristics of silk coupled with the know-how and technological transformation processes used by Cosetex have led to the creation of T.Silk®, a revolutionary insulating material that provides unrivaled comfort.

The comfort of an article of clothing is determined by the sensation one perceives when the clothing is worn. One of the fundamental elements here is “thermo-physiological comfort”, which is determined by the relation between thermal resistance (capacity to retain heat) and evaporative resistance (breathability).

Thermo-physiological comfort is expressed by Intrinsic Water-Vapor Permeability Index (IMT) which is a dimensionless number between 0 and 1.

IMT = 0 means that water vapor cannot pass through the material. IMT = 1 means the material has the same evaporative resistance and thermal resistance as an equal thickness of air.

Thanks to the properties of silk, T.Silk® has a very high IMT: between 0.80 and 0.90, something equaled by few other materials.

Even in very low density padding, which makes it possible to create very lightweight and soft clothing, T.Silk® has very high thermal resistance.

T.Silk® thus combines high breathability with an incredible capacity to trap heat.



THE EXCELLENCE OF THE MADE IN ITALY.

Creating a product with T.Silk® means associating the preciousness, exclusivity and fashionability that silk has always connoted with a series of qualities that cannot be found in any other natural or artificial material.



The material is 100% “Made In Italy”, which is a synonym for history, tradition and time-honored know-how because the Italians have shown excellence in silk processing since the 12th century. The artisanal quality of the process, the careful choice of materials and exceptional creativity are the fundamental ingredients in the T.Silk® project. And they have ensured the success of our products all over the world.



T.SILK®.

COMFORT IS MORE THAN SKIN DEEP.

The delicious sense of comfort offered by products made with T.Silk derives from the unique characteristics of the raw material potentiated by cutting-edge technological processing. Its advantages include health benefits and durability.

Extraordinary heat retention

(Thermal Resistance Coefficient RCT [m2K/W] – Skin Model laboratory analysis method UNI EN ISO 31092:1996 and ASTM F1868)

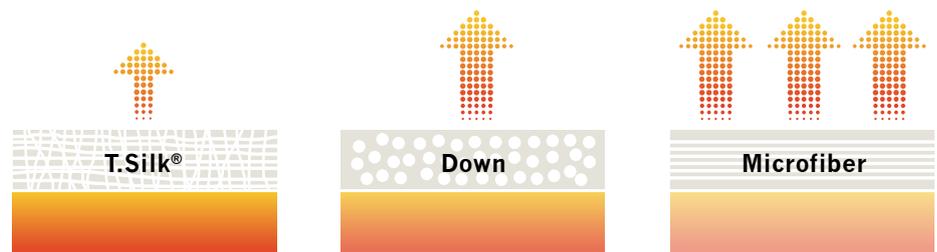
Excellent breathability

(Evaporative Resistance Coefficient – Skin Model laboratory analysis method UNI EN ISO 31092:1996 and ASTM F1868)

Excellent water and water-vapor absorption capacity without causing a “wet” sensation (hygroscopicity/hydrophilicity – UNI EN ISO 31092:1996 laboratory analysis method)

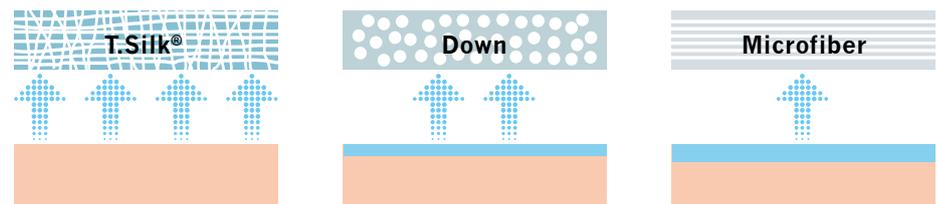
Thermal resistance (ability to retain heat)

T.Silk® v. Down + **31,25%** - T.Silk® v. Microfiber + **610,50%**



Moisture absorption capacity

T.Silk® v. Down + **38,25%** - T.Silk® v. Microfiber + **5800,35%**



Heat absorption and accumulation speed

T.Silk® vs. Down + **22,25%**

T.Silk® vs. Microfiber + **195,00%**

Cooling index

T.Silk® vs. Down + **40,80%**

T.Silk® vs. Microfiber + **69,35%**

Capacity to release excess moisture to the environment (evaporation and release time – UNI EN ISO 31092:1996 laboratory analysis method)

Excellent ability to adapt structurally to the morphology of the human body and to the design of the product (angle of recovery from folding – UNI EN 22313:1993 laboratory analysis method)

Perfect compatibility with human skin, naturally hypoallergenic and antibacterial.

Anti-oxidant and anti-aging properties.

Naturalness and eco-sustainability of the raw materials and production process.

Low flammability, non flame-propagating, does not melt and stick to skin when exposed to fire.

Extreme modularity in terms of range of functional requisites of the final product. Available in various weights, densities and measurements, in single layer or differentiated multi-layer configurations. Outer shell available in different materials.

Heat released in 15 min. (%)

T.Silk®	6,8
Down	12,1

Time needed for cooling (hours)

T.Silk®	4,5
Down	2,75

T.SILK®. UNRIVALED BUT NOT UNTOUCHABLE QUALITY.

It's easy to get an idea of the quality of products made with T.Silk®: just try them on! Advertising materials that describe the material and its characteristics in lofty terms have been developed to give a foretaste of the sensation of excellence when buying an article. The optionally available label and folder with sample contribute to conveying the unique qualities of the product and represent an important element of added value.





THE T.SILK® QUILT. COZY QUALITY.

Not only an exceptional padding and insulation material, T.Silk® Thermoseta is also available as a finished product for consumers. The T.Silk® range now includes a quilt-comforter in a range of dimensions for all types of beds (from child to queen). The quilt is filled with 100% silk padding, available in different thicknesses, and is finished in a 100% silk or cotton shell.

T.SILK®. TECHNICAL SPECS

T.Silk® 80/500	
Dimensions	Panels - Min. 1x1 m – max. 3x3 m depending on customer needs, not necessarily square
Weight	from 80 g/m ² to 500 g/m ²
T.Silk® 80/500 CSPH/CSC/CSS (padding in protective sack)	
Dimensions	Panels - Min. 1x1 m – max. 3x3 m depending on customer needs, not necessarily square
Weight	from 80 g/m ² to 500 g/m ²
Prot. sack	CSPH synthetic non-woven fabric – Weight 20 g/m ² . CSC cotton gauze – Weight 45 g/m ² . CSS 100% pure silk – bonded fibers – Weight 35 g/m ²
T.Silk® NW	
Dimensions	continuous roll h. 140 cm
Weight	from 40 g/m ² to 300 g/m ²
T.Silk® SOFT	
Dimensions	continuous roll h. 140/180 cm
Weight	from 40 g/m ² to 500 g/m ²
T.Silk® Cloud 100% silk	
Dimensions	continuous roll h. 140/280 cm
Weight	from 80 g/m ² to 500 g/m ²
T.Silk® Cloud silk/natural fibers (cashmere – cotton – wool)	
Dimensions	continuous roll h. 140/280 cm
Weight	from 80 g/m ² to 500 g/m ²
T.Silk® Cloud silk/synthetic fibers (polyester – polypropylene)	
Dimensions	continuous roll h. 140/280 cm
Weight	from 80 g/m ² to 500 g/m ²
T.Silk® Cloud with shell	
Dimensions	continuous roll h. 140 cm
Interno	Cloud series
Esterno	NW series / 85% PA – 15% PES series
T.Silk® Moon / Moon +	
Dimensions	continuous roll h. 140 cm
Padding	Cloud series
Shell	hybrid fabric 100& silk (Moon+ – 100% silk fabric)





T.Silk[®] is a registered trademark of COSETEX (S.N.C.)

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