



## ECO Characteristics & Functional Performance of HEMP

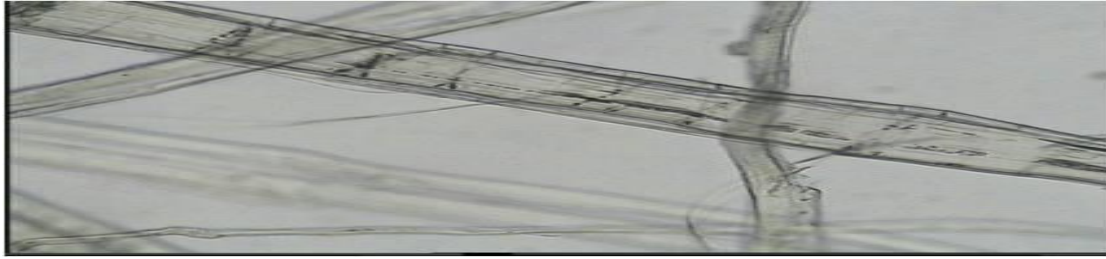
As Hemp fiber has strong adaptability during planting and growth, it is disease-free and pest-free. Therefore it does not require pesticides and fertilization as well as uses very little water for growth. It is the most environmentally friendly natural fiber that can be used for textile and apparel applications. Another key fact to remember, hemp has the following functions without chemical processing:

### 1. Antibacterial and deodorant

Hemp fiber contains trace elements of cannabis phenols, therefore it has natural antibacterial, anti-fungal function, as well as deodorant and perspiration evaporation effects. Although hemp fiber has undergone degumming, dyeing and finishing processes, trace amounts of cannabinoids are still retained and adsorbed. Scientific experiments and a large number of daily use prove that the cannabinoids in hemp textiles have obvious killing and inhibiting effects on Staphylococcus, Coli, Candida albicans, etc. The test results are shown in the attached drawings. (*JINAN TEXTILE SYNTHETIC FIBER TECHNOLOGY 2*)

Bacterial	Time attack	Antibacterial %
Staphylococcus	1 hour	92.35%
	4 hours	97.37%
Coli	1 hour	92.39%
	4 hours	97.55%
Candida albicans	1 hour	92.27%
	4 hours	96.65%

Coupled with the hollow nature of hemp fiber, perspiration and bacteria are quickly discharged or evaporated on this more breathable clothing.



## 2. Moisture wicking

The structure of hemp fiber contains hydrophilic genes, as a result its moisture regain is 12%, which is 40% higher than cotton! On the other hand, hemp fiber has more holes and the water evaporates faster, which makes the absorb moisture and wicking high efficient as well as excellent breathability.

## 3. Abrasion resistance

Hemp fiber is fine, but strong, as a consequence, it has more wear-resistant performance on the same constructure. The figure below shows the comparison between hemp fiber and other hemp fibers.

	Fiber fineness (TEX)	Breaking strength (CN/DTEX)	Elongation at break (%)
HEMP	1.55	3.86	2.25
LINEN	3.05	2.47	2.39
FLAX	4.1	1.78	2.13
RAMIE LEAF	0.63	6.72	3.76
HEMP LEAF	0.29	4.84	5



#### 4. UV resistance

Ultraviolet light refers to light waves with a wavelength between 200NM-400NM. Clothing has three kinds of phenomena to the ultraviolet: reflection, absorption and transmission. Anti-ultraviolet fibers, the more reflective and absorption they are, the better UV resistance effect. On another hand, easier it is to pass through, less effect. Chemical processing increases the reflection and absorption of the fabric as well as the contained in the natural fiber itself are the most important method for the existing clothing to resist ultraviolet light (*printed by Dyeing and Finishing Process Principle I, China Textile Book 2009*). The fabric woven from general hemp fiber can shield more than 95% of Ultraviolet rays. Moreover it can be increased the degree of anti-ultraviolet light through the density of fabric. It can block strong ultraviolet radiation without special treatment. It is an ideal choice for natural, environmental protection and health without chemical processing.

