An Unique Technology in Down Proof Fabrics
An Unique Technology

- Down Proof
- Air Permeability
- Water Proof
- Garment Washing
- Dry Clean
- Machine Wash
- Quick Drying
- Non-elastic Fabrics
The Principle of Permeability

Use an unique composite technology

Thick of the fabrics is only 3-4μm, gram weight is only 3-5 g/m²

Diameter of microspores is only 1-3μm, smaller than down’s diameter

Porosity is over than 80% to achieve permeability.
Electron Micrograph of Down Proof Membrane

3D Network Structure
Enlarge 2000 times
Electron Micrograph of Down Proof Fabrics
Down Proof Solution

Diameter of Microspores < Down Feather

100% Down Proof!

||

0 Piece of Down Feather

GBT 12705.1-2009
No more coating or calendaring, excellent permeability depends on property of membrane. The permeation volume of membrane is $100-150 \text{ L/m}^2\text{•s}$. According to different shell fabrics, varieties of requirements can be reached.

<table>
<thead>
<tr>
<th>Fabrics</th>
<th>Specifications</th>
<th>Permeation Volume (L/m²•s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon Taffeta</td>
<td>100% Nylon 20D/12F×380T 0.3×0.4 Rip Stop</td>
<td>11.38</td>
</tr>
<tr>
<td>TC Peach</td>
<td>85% Polyester 15% Cotton 150D+150D × TC 21/2</td>
<td>13.65</td>
</tr>
<tr>
<td>Nylon Taffeta</td>
<td>100% Nylon 15D 12F 380T</td>
<td>14.25</td>
</tr>
<tr>
<td>Nylon Taffeta</td>
<td>20D 12F 380T Rip Stop</td>
<td>16.75</td>
</tr>
<tr>
<td>Nylon DTY</td>
<td>20D 24F 380T Rip Stop</td>
<td>23.95</td>
</tr>
<tr>
<td>Voile</td>
<td>100% Cotton 60×60/90×88</td>
<td>28.73</td>
</tr>
<tr>
<td>Linen Viscose</td>
<td>53% Linen 47% Rayon 30/2×14/42×58</td>
<td>29.06</td>
</tr>
<tr>
<td>Chiffon</td>
<td>100% Polyester 30D 70 g/m²</td>
<td>36.57</td>
</tr>
</tbody>
</table>
As a contrast, one down garment from domestic manufacture (Nylon Taffeta), one from EU manufacture (Polyester), and one from iTEx were chose to determine their permeation volumes. The results show as following:

<table>
<thead>
<tr>
<th>Fabrics</th>
<th>Characteristic</th>
<th>Permeation Volume (L/m²•s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon Taffeta</td>
<td>Four layers (Down proof bags)</td>
<td>0</td>
</tr>
<tr>
<td>Polyester</td>
<td>Four layers (Down proof bags)</td>
<td>5.96</td>
</tr>
<tr>
<td>Nylon Taffeta + iTEx</td>
<td>Two layers</td>
<td>14.59</td>
</tr>
</tbody>
</table>
Down proof can broaden the fabrics selection to all non-elastic fabrics. Thanks to the iTEX-Down Proof, it makes new style garments without down proof bags come true.
More Textile options

- Traditional Down bags
- Non-elastic Fabrics

Images of different textiles and fabrics:
- Linen
- Viscose
- Voile
- Nylon Taffeta
- Polyester
- Satin Nylon Fabric
- Chiffon
- Traditional Down Bag
- Polyester Taffeta
Thanks to hydrophobic of novel down proof membrane, water pressure resistance comes true.

Unique Fabrics: When water pressure exceeds its tolerance, water overflow through the fabrics without any damage.

Traditional Coating Fabrics: When water pressure exceeds its tolerance, the fabrics will be breaking up it, which can not be down proof any more.
Special Water permeability

**Surface Tension**
- Due to surface tension of water, fabrics’ waterproof comes true.

**Surface Infiltration**
- Surface tension reduces, when surfactant added to water.

**Washable**
- With surfactant, solution can freely cross through fabrics. So that garments can be washed easily.
<table>
<thead>
<tr>
<th>Fabrics</th>
<th>Specifications</th>
<th>Water Pressure Resistance (mmH2O)</th>
<th>Water Pressure Resistance with Detergent ① (mmH2O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linen Viscose</td>
<td>53% Linen 47% Rayon 30/2×14/42×58</td>
<td>986.3</td>
<td>81.0</td>
</tr>
<tr>
<td>Chiffon</td>
<td>30D 70g/L</td>
<td>1205.6</td>
<td>263.6</td>
</tr>
<tr>
<td>TC Peach</td>
<td>85% Polyester 15% Cotton 150D+150D×TC 21/2</td>
<td>1332.7</td>
<td>288.0</td>
</tr>
<tr>
<td>Nylon DTY</td>
<td>20D 24F 380T Rip Stop</td>
<td>1445.2</td>
<td>244.4</td>
</tr>
<tr>
<td>Nylon Taffeta</td>
<td>20D 12F 380T Rip Stop</td>
<td>1925.7</td>
<td>255.0</td>
</tr>
<tr>
<td>Voile</td>
<td>100% Cotton 60×60/90×88</td>
<td>1937.5</td>
<td>173.8</td>
</tr>
<tr>
<td>Nylon Taffeta</td>
<td>100% Nylon 20D/12F×380T 0.3×0.4 Rip Stop</td>
<td>1963.0</td>
<td>657.3</td>
</tr>
<tr>
<td>Nylon Taffeta</td>
<td>15D 12F 380T</td>
<td>2839.5</td>
<td>838.8</td>
</tr>
</tbody>
</table>

① The solution contains 6 g/L household laundry detergent.
Machine Washing

Fabrics lose its water proof properties, when washing with surfactant.

Garments can be adequately cleaned and dehydrated by using laundry detergent.

Since a powerful centrifugal force exists during dehydration, garments with coating fabrics may explode. On the contrary, this situation is avoided by using our technology.
Quick Drying

Due to excellent air permeability

Quick drying after washing, save time and energy

Down garments can be easily household washing
Dry Clean

Chemically Stable Membrane

Insoluble Composite Adhesives

Dry Clean
A REVOLUTION IN FEATHER DOWN PRODUCT INDUSTRY IS COMING!
THANK YOU!

——- ITEX TEAM