



Labeling of UV-Protective Textiles in the United States

The increased availability of Ultraviolet Protection Factor (UPF)-rated apparel provides consumers a new way to protect the skin while enjoying outdoor activities.

There are few factors that contribute to the UPF rating of textile materials:

- Fiber structure (e.g. cotton, polyester, nylon, etc.)
- Density of weave or knit (tighter improves the ratings)
- Dye components (heavy shades generally have better protection ratings)
- Stretch (more stretch lowers the rating)
- Wetness (some fabrics have lower ratings when wet)
- Exposure condition (worn and faded garments lowers the ratings)
- Fabric treated with ultraviolet (UV)-absorbing chemicals might increase their protective capability

In the U.S., there are three published voluntary standards that are used in conjunction with one another to develop the proper values to accurately label products as "UV Protective."

1. ASTM D6544 - Practice for Preparation of Textiles Prior to Ultraviolet (UV) Transmission Testing
2. ASTM D6603 - Specification for Labeling of UV Protective Textiles
3. AATCC 183 - Transmittance or Blocking of Erythemally Weighted Ultraviolet Radiation through Fabrics

Prior to the taking the UPF measurement according to AATCC 183, the fabric or garment is exposed to laundering, stimulated sunlight and chlorinated pool water, in order to be labeled as UV protective. This practice according to ASTM D6654 leads to measurement of the residual level of UV protection in fabrics or garments labeled as providing sun or UV protection, after exposure to conditions that simulate about two years of the normal seasonal use. Therefore, the UV-protection level ultimately placed on a label estimates the maximum UV transmittance of the garment fabric during a two-year life cycle. The UPF measurement may be used in support of a label statement regarding UV protection.

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Labeling is specified in ASTM D6603. Required labeling elements:

- UPF Value
- Classification category, either Good UV Protection, Very Good UV Protection or Excellent UV Protection
- Statement that the UV-protective textile product has been labeled according to ASTM D6603

Optional labeling elements:

- Percentage of UV-B and UV-A blocked value or percentage of UV-blocked value
- Statement that the UV-protection value indicates the lowest amount of protection that can be expected during the life of the product
- Statement that the product reduces exposure to harmful UV-A and UV-B rays
- Statement that no textile product provides 100% protection from UV radiation

Are you prepared to incorporate these standards and labeling requirements to your products?

The Solution

Intertek offers services for measuring the UPF, as well as additional tests to measure textile performance when laundered, exposed to stimulated sunlight, chlorinated pool water, plus labeling requirements.

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