



U.S. Soldiers celebrating at the Armed Forces Classic game day in South Korea. Image Credit: Flickr User [USAG – Humphreys](#)

The U.S. military and uniformed services purchase their textiles based on specifications that have been enshrined in a series of laws¹. The Berry Amendment and the Kissell amendment detail exactly what fabrics and colors are suitable, for everything from camouflage and dress uniforms to tarps and vehicle coverings. For U.S. textile manufacturers, this presents an opportunity to lock down steady contracts, whose requirements do not change as often as those of the ever-evolving world of fashion. With approximately 31,000 line items purchased every year, these contracts can provide a significant amount of revenue for textile makers. Companies manufacturing textiles for U.S. allies must meet similar legal requirements and are presented with similar opportunities.

This is a double-edged sword, however, requiring rigorous quality control systems from manufacturers. If a batch of textiles should fail to meet the standards prescribed by law, it will be rejected and manufacturers must eat the cost of materials, labor, and delivery. Even more alarming, repeated failures could cause the Defense Logistics Agency to end the contract. This would have an immediate, chilling effect on a company's operations. Fortunately for manufacturers, this is a simpler standard to meet than the whims of designers. It's an open book test; all manufacturers need to do to ensure they meet requirements is look up the specifications and test their products before delivery to make sure they match. The requirements should be included with the contract paperwork, and if not, will be available on request.



Military textiles like camouflage are designed to protect warfighters and help them blend into their surroundings. Image Credit: Flickr User [Program Executive Office Soldier](#)

Quality Control Testing Is Essential in Military Textile Production

Testing, instead of simply relying on a company's process, is necessary because of the difficulties of properly coloring military fabrics. The military uses a wide range of specialty materials, many of which are not found in other industries or for average consumer use. These materials can be flame retardant or can provide protection against chemical and biological attacks. They can be made of [synthetic fibers, natural fibers, or a blend](#). These unique properties of military textiles affect the fastness of colorants. Each different material requires a different coloration process and mix of materials. As new materials are tested and approved, even companies with longer-term contracts with the military must adjust their processes to make sure they are meeting specifications.



Military textiles include more than just camouflage. Image credit: Flickr user [See-ming Lee](#)

Spectrophotometers Objectively Assess Textile Color

The best way for manufacturers to meet color specifications is to test [fabric samples with a reflectance spectrophotometer](#). These instruments objectively assess the color of opaque objects to a high degree of accuracy and repeatability. In a quality control laboratory, a technician simply places the sample, presses a button on the instrument, and notes whether the sample's color lies within an established tolerance standard. It's an easy process, made simpler by the precise color standards set forth by the military. Manufacturers know what color their fabrics need to be, and a spectrophotometer can tell them if their fabrics are that color. This mitigates color quality risk entirely.

A few practical issues [can arise when measuring fabrics](#), that should be taken into consideration. First, fabrics aren't rigid, and may accidentally pillow into the measurement port, throwing off the measurement. Technicians should be sure to secure fabrics so this does not happen. Next, coloration can occur inconsistently over the breadth of a fabric. Technicians should measure multiple areas on a sample to ensure they all fall within tolerance standards. Modern HunterLab spectrophotometers are able to easily average measurements together, aiding this process. Finally, should the material be gauzy or otherwise nearly transparent, a backing will be required. This backing should always be the same color, and the instrument should be calibrated to take this into effect.

To learn more about how spectrophotometers can improve your textile business, or if you have questions about the spectrophotometer you're currently using, [contact our friendly, professional staff today](#). We're happy to help.

1. "Textiles and our military," 2016, <http://www.ncto.org/facts-figures/textiles-and-our-military/>