A Survey of Standards for the U.S. Fiber/Textile/Apparel Industry

Craig G. Pawlak

U.S. DEPARTMENT OF COMMERCE
Technology Administration
National Institute of Standards
and Technology
Manufacturing Systems Integration Division
Gaithersburg, MD 20899

April 1996
DISCLAIMER

No approval or endorsement of any commercial product, organization, or company by the National Institute of Standards and Technology is intended or implied. Certain commercial equipment, instruments, or materials may be identified in this report in order to facilitate understanding. Such identification does not imply recommendation or endorsement by the National Institute of Standards and Technology, nor does it imply that the materials or equipment identified are necessarily the best available for the purpose.

This publication was prepared by United States Government employees as part of their official duties and is, therefore, a work of the U.S. Government and not subject to copyright.
A SURVEY of STANDARDS for the U.S. FIBER/TEXTILE/APPAREL INDUSTRY

Craig G. Pawlak
Manufacturing Systems Integration Division
Manufacturing Engineering Laboratory
National Institute of Standards and Technology
Gaithersburg, MD

ABSTRACT

This report documents a survey of standards relevant to the U.S. Fiber/Textile/Apparel (FTA) industry. The standards are discussed in four main groups—integration standards, test methods, quality standards, and standard reference data and materials. The Appendix of the report lists the titles of all standards found, grouped together by the organization responsible for them. Those organizations are also listed along with contact information for them. The report attempts to bring together useful information concerning FTA standards as a starting point to support the industry in intelligently planning future standards' development efforts.

KEYWORDS

apparel, fiber, integration, quality, specifications, standards, test methods, textile
ACKNOWLEDGMENTS

This work is supported by the government initiative on High Performance Computing and Communications (HPCC), which is primarily being supported through the Systems Integration for Manufacturing Applications (SIMA) initiative. The work is being done by the Manufacturing Systems Integration Division of the Manufacturing Engineering Laboratory of the National Institute of Standards and Technology.

I would like to thank my supervisor, Jeane Ford, for her support of this project, and Howard Moncarz for his editing and other help.
TABLE OF CONTENTS

ABSTRACT .................................................................................................................. iii

KEYWORDS................................................................................................................. iii

ACKNOWLEDGMENTS ............................................................................................... iv

TABLE OF CONTENTS ............................................................................................... v

1 INTRODUCTION ....................................................................................................... 1
  1.1 Purpose .................................................................................................................. 1
  1.2 Scope .................................................................................................................... 2
  1.3 Methodology ........................................................................................................ 2
  1.4 Reader’s Guide ..................................................................................................... 2

2 OVERVIEW OF FTA STANDARDS ...................................................................... 2

3 INTEGRATION STANDARDS ................................................................................. 3
  3.1 Business/EDI Transactions .................................................................................. 4
  3.2 Manufacturing Automation ............................................................................... 6
  3.3 Product Data Exchange ...................................................................................... 7

4 TEST METHODS ....................................................................................................... 8
  4.1 Fibers .................................................................................................................... 9
  4.2 Textiles ................................................................................................................ 9

5 QUALITY STANDARDS ......................................................................................... 10
  5.1 General Apparel ................................................................................................. 10
  5.2 Special/Protective Clothing .............................................................................. 10
  5.3 Military Specifications and Standards ............................................................... 11
  5.4 Textile Machinery ............................................................................................. 12

6 STANDARD REFERENCE INFORMATION ..................................................... 13
  6.1 SRD ..................................................................................................................... 13
  6.2 SRM ..................................................................................................................... 14
  6.3 Terminology ........................................................................................................ 14

7 SUMMARY ............................................................................................................... 15
APPENDICES

A REFERENCES ..................................................................................17
B FTA STANDARDS ORGANIZATIONS ............................................19
C FTA STANDARDS LISTINGS ..........................................................21
  C.1 AAMA Standards ......................................................................21
  C.2 AATCC Test Methods and Procedures ......................................22
  C.3 ALCA Standards ......................................................................26
  C.4 ASTM Textile Standards ..........................................................30
  C.5 Government/Military Standards and Specifications .................40
  C.6 ISO Standards ..........................................................................58
  C.7 NFPA Apparel Standards ..........................................................75
  C.8 SAE AMS Textile Specifications ..............................................76
D GLOSSARY ......................................................................................79
E LIST OF ACRONYMS ....................................................................86

FIGURE

Figure 1 Taxonomy for FTA Standards .............................................4

TABLES

Table 1 Cotton Staple Qualities .......................................................80
Table 2 Fibers by Origin .................................................................81
Table 3 Sizing Types ......................................................................83
A SURVEY of STANDARDS for the U.S. FIBER/TEXTILE/APPEAREL INDUSTRY

Craig G. Pawlak
Manufacturing Systems Integration Division
Manufacturing Engineering Laboratory
National Institute of Standards and Technology
Gaithersburg, MD

1 INTRODUCTION

The Fiber/Textile/Apparel (or FTA) industry is one of the largest manufacturing industries in the United States. It employs over one and a half million people, accounting for ten percent of all jobs in the U.S. manufacturing sector. Apparel and textile products shipped each year are worth well over one hundred billion dollars. The success of the FTA industry in the United States is critical to the economic well-being of our country.

However, in the last decade, the FTA industry's domestic markets, which are key, have been seriously eroded by foreign imports. As a result, hundreds of thousands of jobs have been lost over the past ten years and new job opportunities have been missed as well.

The American Textile Partnership (AMTEX), initiated in mid-1992, is a collaboration of industry research consortia and academia working in conjunction with the U.S. Department of Energy (DOE) national laboratories, to provide assistance to the U.S. FTA industry to recover its domestic market share and enhance its global competitiveness. In June 1995, the National Institute of Standards and Technology (NIST) in the U.S. Department of Commerce (DoC) officially joined the AMTEX collaboration. The survey described in this report is the first effort undertaken by NIST in the AMTEX effort. The goal of the survey is to help identify the standards that apply to the entire FTA industry.¹

1.1 Purpose

The survey is intended to benefit the Demand Activated Manufacturing Architecture (DAMA) Project, one of the key AMTEX projects. The main goal of DAMA is to reduce the long cycle time that it takes for a product to ultimately work its way through the "apparel pipeline"—from fiber production to an apparel product on the retail shelf. The long cycle time costs the industry an estimated $25 billion a year due to stockouts, inventory, and distressed pricing. The goal of DAMA is to greatly reduce that loss by improving the efficiency of information exchange throughout the pipeline and enabling effective action as a result of that information. Understanding what standards apply throughout the pipeline should be useful to that effort.

This paper reports on the results of that survey. It identifies standards related to the FTA industry, identifies and describes the organizations responsible for approving those standards, and directs the reader to the appropriate sources for further information.

---

¹AMTEX identifies the FTA industry by the term "integrated textile complex," and has coined the acronym, "ITC."
1.2 Scope

The survey covers both national and international standards and standards organizations involved with and relating to the fiber, textile, and apparel industries. This includes industry standards, which make up the majority of the standards found, as well as any specifications issued by the government (such as the MIL-series). This report focuses on standards that are currently in effect, although past standards and current work may be mentioned to provide additional background and understanding.

There are many products of the fiber and textile sectors of the FTA industry that do not go through the entire life-cycle apparel pipeline (from fiber to textile to apparel to customer). Standards relating to fiber products that do not end up as textiles, but are rather used for industrial purposes, are included within the scope of this survey. Also included are fiber products such as rope or webbing, which do not eventually become part of a garment. In addition, any products that are fabricated from fiber and textile products are included. However, the main focus of this survey concentrates on standards used in the apparel pipeline.

1.3 Methodology

A general search of standards for the industry was accomplished through database searches as well as the use of other reference material. The sources used are listed in Appendix A. The approach was centered on determining the standards organizations for different sectors of the industry. The standards organizations are listed in Appendix B. After identifying the organizations, lists of their standards were obtained. The listings are transcribed for use in Appendix C. For the purposes of discussing the standards in the text, they were organized into four main groups.

1.4 Reader’s Guide

Section 2 provides an overview of the different groups for the standards that were found. Sections 3 through 6 describe each group of standards in greater detail. Section 7 concludes the main text of the paper with a brief summary.

Following the text are five appendices—A, B, C, D, and E. Appendix A contains a list of references that are referred to in the text as well as additional references that are useful for further information. Appendix B identifies standards' organizations relevant to the FTA industry with a brief description of each and contact information. Appendix C lists the titles of the standards found over the course of this survey. The documents are grouped according to the standards organization responsible for each. Appendix D contains a glossary of terms related to the FTA industry. Appendix E is a brief list of acronyms used in the paper, intended for quick reference.

2 OVERVIEW OF FTA STANDARDS

Based on an examination of the types of FTA standards found (determined by looking at titles, content, and usage), standards were divided into four broad types. The standards are divided into integration standards, test methods, quality standards, and standard reference data and materials. Although divided for the purposes of discussion, standards listed in Appendix C are grouped by publishing organization.

The first group contains integration standards. These are standards which allow one system or activity to communicate with another. The types of communications may range from one machine
communicating with another on a shop floor to one company ordering materials or products from a supplier. Integration standards are covered in more detail in Section 3.

The second, and largest, group of standards found contains test methods and procedures. These are methods for testing properties of anything from raw fibers, to yarns, to woven fabrics, or even the machinery used to make textiles. The standards themselves are arranged in the form of an experiment format, with sections on materials, procedures, and observations. Properties determined by this group of tests range from the tensile strength of raw cotton fiber to a fabric's ability to resist fading or running (colorfastness). More detail about test methods can be found in Section 4.

The third group is quality standards. These deal with more functional properties of a finished fabric or apparel product. Quality standards specify how to determine if certain products are suitable for the application intended. The specification might cover the protective ability of a fireproof jacket, or the stitch spacing of a dress. The bulk of these standards are military specifications for combat apparel, but there are many important standards which apply to other areas. Section 5 discusses quality standards in greater detail.

The remaining group of standards consists of standard reference materials (SRM), standard reference data (SRD), and terminology. An SRM is used to rate by direct comparison other data or materials for different applications. An SRD is a collection of numerical information accepted as accurate within a domain. For example, anthropometric data (body measurements of different types of people), is used by companies for apparel sizing (an example of SRD), and standard color or color change charts or samples are used in the apparel industry for direct comparison tests relating to colorfastness (an example of SRM). More detail can be found in Section 6.

Figure 1 (on page 4) shows the grouping used in this discussion. In the figure, the four broad groups of standards are each decomposed further to show the types of standards contained.

3 INTEGRATION STANDARDS

Integration is the process of unifying separate items, that is to make multiple objects (whether they be machines, computers, or entire sectors) act as if they were one unit. This is contingent upon accurate communication of ideas and information between the (different) parties involved. For this to occur, both parties must agree upon and use the same protocol, or "language." There are many accepted standards of communication for the multitudes of different interfaces existing in the FTA industry. These interfaces exist from one end of the FTA life cycle to the other, and the efficiency and effectiveness of the communication across these junctions has a major effect on the efficiency of the industry.

Since the area of integration is so important, special attention is needed here. Time delays between the different phases in the life cycle are due most directly to ineffective communication. These delays (manifested in the need to keep large inventory) are responsible for $25 billion being lost annually. The loss occurs through markdowns, stockouts, and inventory maintenance. The other result of lack of integration is that the FTA industry as a whole cannot respond to demand directly, but rather must anticipate it, a less desirable situation.

This section will discuss integration standards that are in existence now, as well as describe some standards that are under development. Some of the most important work is still underway, so special attention will be given to these up-and-coming protocols. Division of the integration-related standards is done by what type of interface is affected. The three processes discussed are business transactions, automated manufacturing, and product data exchange.
Figure 1: Taxonomy for FTA Standards

3.1 Business/EDI Transactions

Put simply, electronic data interchange (EDI) is the process of conducting business electronically, rather than by paper. Communication occurs between two computers, rather than between two people². This includes many different types of transactions, such as placing orders, transferring funds (payment), and confirming receipt of goods. Although the task of creating electronic protocols to replace all the different (paper) forms used in various kinds of businesses is daunting, the benefits in terms of efficiency, accuracy, and ability to trace make it more than worthwhile.

² Shaw, p. 5. 1994.
Because the information is transmitted rather than mailed, EDI is faster than the traditional paper method. Since the "forms" don't have to pass through as many different sets of hands, danger of an order being miswritten, misplaced, or permanently lost is almost completely eliminated. And lastly, electronic transmission allows one to trace the history of a form, a feature not always available with normal mail.

Although EDI began in the 1960s, standards development didn't begin until 1978, when the American National Standards Institute (ANSI) founded the Accredited Standards Committee (ASC) X12. This organization was chartered with the responsibility of creating transaction sets (protocol for a specific business exchange) for electronic commerce. X12 grew over time and has established over two hundred different transaction sets through more than a dozen subcommittees. Although these standards have been very widely used in North America, most industries have found it necessary or desirable to modify the basic transaction sets in different ways to better suit their business.

The international EC/EDI effort is known as the United Nations Electronic Data Interchange for Administration, Commerce, and Transport (UN/EDIFACT or just EDIFACT) standard. UN/EDIFACT came about with the merger of the original EDIFACT with the United Nations Trade Data Interchange (UN/TDI). This standard has often been seen as a competitor to X12, though in fact their methods of organization and design rules are quite similar. By the very nature of EDI only one protocol can be used, unless the two are somehow made compatible. For this reason, ASC X12 announced a deadline for converting to the international standard. This was initially set for 1997, but was later extended to at least 1999, pending a poll of EDI users that will be conducted the same year as the original deadline. As part of the EDIFACT initiative, the International Organization for Standardization's (ISO) Technical Committee (TC) 154 developed some syntax rules, which were first published in 1988. They have since been revised.

In the FTA industry, EDI standards work can be divided into three domains: textile, apparel, and retail. The Fabric and Supplier Linkage Council (FASLINC) was established to adapt X12 standards to the specific needs of textile companies and their suppliers (in the fiber sector). This is accomplished mainly by inserting textile-specific codes into existing transaction sets, but a few new transaction sets were actually developed by FASLINC and approved by ASC X12. FASLINC as an entity was discontinued and its standards and responsibilities were transferred to the Apparel Textile Manufacturers Institute (ATMI).

The Textile Apparel Linkage Council (TALC) and the Sundries and Findings Linkage Council (SAFLINC) promote and develop electronic commerce standards for clothing manufacture. Founded in 1986, TALC is responsible for interactions between fabric suppliers and apparel companies. SAFLINC handles business with the suppliers of non-textile materials needed for garments, such as zippers and buttons. These two organizations were merged to form TALC/SAFLINC, which is now part of the American Apparel Manufacturers Association (AAMA).

There are several EDI standards used in the apparel-retail sector. The Uniform Communication Standards (UCS) began development in the early 1980's for use by the grocery industry, but has

---

since been expanded in its scope and application\textsuperscript{7}. It consists of about thirty transaction sets, as well as the stated protocol of using the public phone system with a modem speed of 4800 or 9600 baud. The Warehouse Information Network Standard (WINS) consists of seven transaction sets for that aspect of retail. The emerging standards for use by all types of merchandising industries is the Voluntary Interindustry Communication Standard (VICS). VICS is a subset of ANSI X12 pertaining specially to retail. The domains for UCS and VICS overlap. For more information on any of these standards, contact the Uniform Code Council at the address and number listed in Appendix B.

\section*{3.2 Manufacturing Automation}

Much of the manufacturing of textiles is automated. Monitoring and control of the many different machines present on the shop floor can require a lot of people, in the worst case one per machine. Although most of the machines don't require constant monitoring or input, setting them up or changing a weaving pattern, for example, can take a lot of time. Even shutting down a machine often requires a long process, and can be dangerous if there are personnel in the wrong places on the shop floor. This is important because utility companies commonly offer textile manufacturers significant saving on their electricity if they can shut down power in a short span of time (this reduces the peak load and keeps the power company from switching to less efficient back-up generators).

Integrating the manufacturing process allows an entire shop floor to be run from the convenience (and safety) of one central control booth. This can only take place if all the machines are compatible with the controller and each other. Presently, companies making textile machinery use proprietary methods of storing and communicating information such as speed of a process or error warnings. As a result, these machines can only be integrated with others made by the same company—an inconvenience for textile manufacturers who may already have other equipment. If the makers of textile machinery adopted voluntary standards for shop floor data, CIM for textiles would be much easier to achieve.

One of the major proponents of computer-integrated manufacturing (CIM) for the FTA industry is ATMI. To aid in the development of voluntary standards, ATMI is working on a dictionary of data elements for control and monitoring of textile processes. The rationale is that in order to come up with a universal data set for a certain process, one must first identify all the different variables involved. This is being done in conjunction with ISO TC 72, and will be published in parts as ISO 10782. The first part covers spinning and related processes. At the present time, the dictionary contains over 100 variables that require attention, as well as definitions and a method of organization. It is currently in the draft stage and under committee review.

Also, the Apparel Research Committee (ARC) of AAMA has been developing standards related to CIM (as well as product data, which will be discussed in the next section), for apparel manufacturing. The first AAMA standard published and approved by ANSI is a modified version of Gerber Garment Technology, Inc.'s protocol for automated cutting machines\textsuperscript{8}. A second standard of AAMA deals with pattern data interchange (PDI)\textsuperscript{9}. The PDI standard also pertains to interfacing computer-aided design (CAD) systems with computer-aided manufacturing (CAM) systems. Work is in progress on a standard for NC stitching machines and a CIM architecture standard\textsuperscript{10}.

\begin{itemize}
\item \textsuperscript{7} Uniform Code Council, p. 2. 1994.
\item \textsuperscript{8} ANSI/AAMA-001-1992: "Standard for Numerically Controlled Cutting Machines."
\item \textsuperscript{9} ANSI/AAMA-292-1993: "Standard for Pattern Data Interchange - Data Format."
\item \textsuperscript{10} AAMA. 1995.
\end{itemize}
3.3 Product Data Exchange

Product data includes information from every stage in the life cycle of a product. This extends from initial design through manufacturing, shipping, and even recycling of the product. A standard for product data has as its goal the accommodation of all the computer interfaces a product will encounter, thus integrating the life cycle. The benefits include independence from any particular software tools (such as a certain CAD system); continuity of data (same format of information can follow the product through the different stages of its life); and the ability to communicate a neutral data format between different departments, sectors, and even industries.

The international standard for development of total product data is called STEP (standard for the exchange of product model data). It is being developed in conjunction with ISO by TC 184/SC 4. STEP is being published (in many parts) as ISO 10303. Parts of STEP that have already finished the approval process include standards relating to drafting and design. At the present time, there are over forty more ISO 10303 parts in some stage of planning, development, or approval.

STEP is an open methodology and framework for the development of product data models and specifications. STEP uses a language for modeling information that is known as EXPRESS. Within STEP, Application Protocols (APs) are created that specify the product information requirements within the scope of particular applications. In addition to these APs, a large amount of generic information, applicable to various kinds of products and applications, is used. This saves the AP developers from redundant effort. Each AP contains a number of important elements, including a scope for the AP, application reference model (ARM) which describes the information requirements and constraints in the terminology of that particular domain, application interpreted model (AIM) that is a representation of the ARM in terms of STEP constructs, and methods for testing conformance of an implementation of the standard (conformance testing, abbreviated as CT).

The effort to extend STEP to apparel product data has been undertaken by the Apparel Product Data Exchange Standard (APDES) project at NIST. This project is funded by the Defense Logistics Agency (DLA) which is interested in streamlining the process of contracting uniform design and manufacture through adoption of integration standards; and improving garment fit by replacing the traditional ready-to-wear sizing with a made-to-measure system.

A prototype AP (to be used as a straw man for an official ISO STEP AP and containing all the parts of an STEP AP except for the AIM) for ready-to-wear pattern making has been under development at NIST. The AP covers ready-to-wear pattern making, focusing on the "representation of two-dimensional (flat) patterns generated by the traditional ready-to-wear pattern making and grading methods." A prototype AP for made-to-measure pattern making is also under development. The ultimate goal, of course, is to incorporate all information that describes an apparel product in terms of STEP.

Other work related to apparel product data is being done by AAMA/ARC. As mentioned earlier, ARC has published an apparel pattern data interchange standard approved by ANSI. This standard is based largely upon the Drawing Interchange file format (DXF) developed by AutoDesk™, Inc. for their AutoCAD® product. In addition to continuing research, ARC is tasked with promoting

---

the move towards CIM standards within the apparel community and identifying technologies that will enable the U.S. apparel sector to become more competitive globally\textsuperscript{15}. Current product data work includes developing implementation guidelines for the pattern data interchange standard, a standard for grade rule table exchange to support the pattern data exchange standard, and a plotter data exchange standard\textsuperscript{16}.

The area of integration standards is one that seems to warrant special attention by those in the FTA industry, especially in the apparel sector, where losses to foreign competition are greatest (due to intensive labor requirements). A large portion of the apparel sector is made up of small and medium-sized companies who lack the resources to develop their own standards and protocols. Potential exists for increasing efficiency through integration and automation standards development (and implementation).

4 TEST METHODS

In order for an industry with hundreds of suppliers selling (what is supposed to be) the same product to hundreds (or even thousands) of buyers, standards are needed to insure that products of the same type are uniform (and to rate goods based on their quality). FTA is such an industry, where multitudes of cotton growers and wool farms sell tens of thousands of tons of raw fiber to the fabric manufacturers who, in turn, sell many bolts of colored fabric to the apparel manufacturers. It is absolutely essential that the apparel sewers, who produce the end product, have materials to work with that are of high and consistent quality.

At virtually every step in the transformation of raw fibers to finished apparel, inspections are made and tests are done. Specific physical (and sometimes chemical) properties of the fiber, or textile, or apparel are tested to insure that they meet the requirements of the manufacturer and its buyers. It is important that each company uses the same tests for the same property, so that the results can be interpreted consistently by those working with the manufacturer and their customers. To this end, standards organizations are formed and standard test methods and procedures created and published.

Most test methods consist of three main sections: purpose and scope, procedure, and evaluation method. The purpose and scope describe exactly what property is to be tested by the method and to what type or types of fibers or fabrics or yarns it pertains. The procedure section is at the heart of the test, and explicitly describes what steps to take in order to perform the test. The procedure details what supplies, chemicals, or special equipment to use and how to use them. Lastly, the evaluation section tells the tester what exactly to look for in rating the particular property being observed and very often refers to a control sample or a standard reference system, such as the American Association of Textile Chemists and Colorists (AATCC) Chromatic Transference Scale\textsuperscript{17}.

Test methods apply to the fiber and textile segments of the industry, but in general not the apparel sector, as the physical properties that can be tested completely objectively have already been taken care of. Evaluation of finished apparel garments are done by means of quality standards and specifications, which are covered in a later section. Test methods relating to the fiber and textile sectors of the FTA industry are described in turn below.

\textsuperscript{15} Moncarz \\& Lee 1. 1994.
\textsuperscript{16} AAMA. 1995.
4.1 Fibers

The fiber sector harvests raw natural fibers (or produces raw man-made filaments) and sells these fibers to the textile sector. The most basic properties of these fibers (and filaments) need to be known by both sectors. To this end, many tests are performed and their results recorded. The main properties of interest include length and length distribution, strength and elongation, maturity, and adhesion to other materials, such as steel or rubber. These properties are important because they directly relate to how the fibers will act during the spinning process.

The tests used for fibers and textiles are created and published by two main organizations. They are the American Society for Testing and Materials (ASTM), and ISO TC 38. With respect to leather goods, the American Leather Chemists Association (ALCA) publishes standards, as does ISO. Approximately 90 of ALCA’s 140 or so test methods have been adopted by ASTM. These organizations play a key role in the development of standards. Since they are independent of any particular company, their standards are used throughout the sector. Having external standards also saves each grower or distributor from having to develop and adopt its own standards, which wouldn’t be universal anyway.

Although some of the test methods apply to all types of fibers, most are specifically targeted at one type each. This is due to the intrinsic differences between man-made and natural fibers, and the further differences between cotton and wool (the natural fibers used most often). So, although the properties being tested are limited in number, the number of test methods are proliferated by the variety of fiber types.

4.2 Textiles

The business of the textile sector is to take raw fibers and filaments and convert them into fabrics which can then be sewn into garments. This process involves three main steps. In the first, the yarn manufacturer prepares the fibers or filaments (through carding, drawing, and roving), spins it into cones of yarn, and then winds the yarn onto spools. During the second stage, the slashing plant chemically treats the yarn, preparing it for the next step. The last, and most involved process is accomplished at the weaving plant. The yarn is woven (or knitted) into fabric first. After that, the fabric is prepared, dyed, and finished. Lastly, the fabric is cut for shipping to the garment sewing plants.

Throughout this process numerous checks are made. After every major step of the fabric manufacturing process, at least a visual inspection is done. Test methods applying to textiles are concerned with a wide range of features. These include strength, flammability, creasing, and dimensional change due to different environmental factors. The property that is most thoroughly tested is colorfastness. The importance of that particular behavior of a textile is shown in that almost half of ISO’s 114 standards related to fabrics deal with colorfastness.

There are a few organizations that publish test methods for textiles. At the national level, AATCC and ASTM both make standards. ISO TC 38 publishes standards, including test methods, on the international level. As its name implies, AATCC is most concerned with chemical and biological properties of fabrics and colorfastness, though some physical properties are covered. ASTM tests are very physical in nature, dealing with aspects such as abrasion resistance, moisture, and mass. There are many more tests applying to textiles made by AATCC than by ASTM. ISO tests are dominated by tests for colorfastness, since many of the other textile-related standards are reference information and not test methods.
5 QUALITY STANDARDS

A major part of the body of standards which affect the FTA industry are general quality standards or specifications. Unlike the integration standards and the test methods, quality standards are concrete expectations for a finished product of a certain type. The expectations conveyed through the document vary in content from flammability (such as a fireproof coat) to appearance, and vary in detail from a general durability specification to a military standard for a uniform specifying every design particular.

Quality standards are used for many different products in the FTA industry. In most cases, the standard applies to high-level concepts in a finished product, rather than minute details. For instance, there are not many quality standards applying to raw fibers, since examining most of the properties of those fibers require specific tests. In keeping with the organization philosophy, the quality standards have been sectioned on the basis of their area of application. The major areas of interest are general apparel, special and protective clothing, military specifications, and textile manufacturing machinery.

5.1 General Apparel

The majority of garments which are manufactured are sold to retailers who in turn sell them through stores. The success of the apparel sector, and to a large part the whole FTA industry, is determined by whether people, especially those in the United States, buy the clothes that the garment companies sew. It is of paramount importance that the garments put on the shelf be of consistently high quality, and it is in the interests of the manufacturers to minimize the number or seconds that cannot be sold for full price.

There are many standards used to ensure that garments sold to a customer satisfy minimum quality as defined by those standards. Most manufacturing and also retail companies have their own inspections, but national and international specifications do exist. These are written by ASTM on the national level. ASTM has about fifty performance specifications, each applying to a different type of apparel, such as knitted overcoat fabrics for men and women\(^\text{18}\), or swim wear\(^\text{19}\) fabrics. In addition, some smaller apparel manufacturers and retailers adopt the inspection criteria of large, established companies such as J.C. Penny, Inc., making such procedures \textit{de facto} standards.

It is important to note that most of these specifications are standards of quality for the fabrics used to sew the garments. They insure that the clothing made will meet some basic standards of durability and, in some cases, fit. ASTM publishes several standards relating to fit, as opposed to the fifty or so fabric-related performance specifications mentioned earlier. The manufacturers and designers of clothing who use these standards still have the ability to make whatever they want, provided the material it is made from meets the specifications they have voluntarily adopted. In the end, it is beneficial for fabric manufacturers to use these quality standards so potential customers in the apparel sector will know that they are not buying shoddy materials.

5.2 Special/Protective Clothing

The area of special and protective clothing is one of the most sensitive to quality. This is for the obvious reason that the consequence of product failure is often injury to the wearer of the garment.

\(^{18}\) D 3562 - 92 (ASTM) : "Performance Specification for Men's and Women's Sliver Knitted Overcoat and Jacket Fabrics."

\(^{19}\) D 3994 - 94 (ASTM) : "Performance Specification for Men's, Women's, and Children's Woven Swimwear Fabrics."
(This is much worse than merely inconveniencing or alienating a customer, the result of general apparel defects.) For this reason, quality standards must be more demanding and much less tolerant of deviations. As a result, the field of protective clothing has a relatively large number of fairly specific quality standards and specifications associated with it.

Standards relating to protective and other special clothing can be differentiated on the basis of what exactly the garment they relate to is intended to do (or in most cases prevent against). Special clothing is needed for use in a variety of hazardous environments; it may protect against electricity, chemicals, fire, or even cold. Because of the large number of fires and firefighters, fire-protective clothing is probably the most common protective clothing, though electrically insulated and chemical-protective clothing are very important in their respective industries.

Specifications for special clothing are published by ISO TC 94 on an international level. The National Fire Protection Association (NFPA) writes national requirements for protective clothing for fighting fires. There are many other standards that relate to protective clothing which are not quality standards, but rather test methods applied to the fabric from which these garments are made. These standards are published primarily by ASTM and ISO.

5.3 Military Specifications and Standards

The U.S. Armed Forces are probably the largest single customer for apparel made in the United States. The Department of Defense (DoD) spends hundreds of millions of dollars every year purchasing uniforms and other textile-based equipment. The consistent quality of garments purchased is highly valued by the military, more so than in the civilian market. In addition to the uniforms looking the same, they must meet strict requirements for durability and reliability, since many of them are ultimately intended for combat. It is also important that the clothing is functional and easy to wear under a wide variety of conditions. To insure the consistency, toughness, and utility of their uniforms, DoD publishes specifications generally referred to as the "MIL-" standards or specifications.

There are over 600 MIL-specifications that detail the requirements of specific apparel and textile-related products and a dozen or so MIL standards that detail the requirements of a category of apparel and textile-related products. These specifications vary greatly in content. On one side of the spectrum, quality standards exist that cover all uses of certain fabrics or textiles in military equipment. At the other extreme, some MIL-specifications are detailed requirements for the making of a certain garment. There are also a substantial number of standards that involve textile products other than apparel. Examples of this would be fabric hoses and life preservers. Since these are still products of the FTA industry as a whole, they have been included within the scope of this survey.

Military specifications follow a specific format. Each has six sections—scope, applicable documents, requirements, quality assurance provisions, packaging, and notes. The scope section specifies exactly what the document applies to, for instance a polyester/cotton broadcloth durable press shirt. The next section lists other documents that the manufacturer must adhere to in making the garment. These include federal and other military specifications and standards, as well as test methods published by private organizations such as AATCC and the American Iron and Steel Institute (AISI)—for steel rings, zippers, and fasteners. The third section details expectations, while the fourth section explains how those requirements are to be verified. The

---

20 MIL-C-429A : "Cloth, Twill, Nylon."
21 MIL-C-1509H : "Coat, Food Handler's (Steward)."
22 MIL-44041C(GL) : "Shirt, Man's, Short Sleeve, Polyester Cotton, Army Green 415, Durable Press."
The packaging section is self-explanatory. The last part of every MIL-specification contains information of a general or explanatory nature that may be helpful, but is not mandatory.

The current system of military specifications is designed to insure total uniformity. Every detail of the sewing process is dictated. There are typically a dozen or more other documents referenced in each MIL-specification. The reference to each consists only of the name and number of the standard. No indication is given to the manufacturer of where to find the information that pertains directly to the making of the garment. Unless the scope of the item referred to is very narrow, this can make it difficult for the contractor to comply. Companies are left to search a possibly very large document from cover to cover to find what might be a very small section applicable to their product.

At the present time, proposals are being made to use commercial specifications because they are simpler. The format for the new series is known as a commercial item description (CID). The main difference is that the new format will specify what is desired, and allow the contractor to make it in the most efficient method available. Previously, the MIL-documents gave exact instructions for making the item, which placed sometimes unnecessary demands on the companies contracted to do the job. In addition, some of the specifications will be given in terms of performance, rather than requiring a certain material, giving the maker leeway in choosing the most desirable way to meet the requirements. This will make the process of procuring uniforms faster and more efficient.

5.4 Textile Machinery

The process of making textiles from fibers and filaments is almost completely done by machine. Setting up and loading the equipment is still often done manually, but the actual spinning, weaving, etc. is done automatically. Therefore, the sector depends on these devices consistently working in the proper manner. Standards are used to insure the safety and reliability of textile machinery.

The primary publishers of specifications for textile machinery are ISO TC 72 and ASTM. Most of these documents apply to key pieces of the machines, such as the rings and travelers on ring spinning machines\(^{23}\), or the cones for yarn winding\(^{24}\). There are also a good number of standards which give definitions and terminology relating to different types of textile equipment. These will be discussed in the next section.

6 STANDARD REFERENCE INFORMATION

Standard reference information is necessary in any field where uniformity and consistency is important. This information makes repeatability possible by providing accepted standards that can be used for comparison purposes and computation purposes. For example, AATCC has a standard table for gray-scale color change\(^{25}\). This table is intended for use with the test methods they developed. Use of that table insures that the evaluation given to the textile will not depend on the tester, but rather be objective (with respect to the AATCC standard). The test results will also be reproducible.

---

\(^{23}\) ISO 96-1:1992 : "Textile Machinery and Accessories — Rings and Travellers for Ring Spinning and Ring Doubling Frames — Part 1: T-rings and Their Appropriate Travellers."

\(^{24}\) ISO 111:1978 : "Textile Machinery and Accessories — Cones for Yarn Winding (Cross Wound) — Half Angle of the Cone 4 Degrees 20'.”

Standard reference information can be divided into three categories: standard reference data (SRD), standard reference materials (SRM), and terminology. These are described below.

6.1 SRD

Standard reference data (SRD) refers to a collection of scientific or technical measurements, values, or facts that can be represented quantitatively. SRD is accepted as correct within a particular domain of expertise to be used as the basis of further calculations or decisions. A very simple example from the field of engineering is the assignment of the value for the constant π. \( \pi \) is the ratio of a circle’s circumference to its diameter, and its value can only be estimated to a specified level of precision. For the purpose of taking a test, students may be told to use the value of 3.14 for \( \pi \). Therefore, they should all get the same answer, and their answers should conform with the professor’s solutions. Although simple and far removed from the FTA industry, this analogy illustrates both the nature of SRD and its significance.

It is easy to see the importance of these accepted values when the opposite scenario is considered. If there was no accepted value for \( \pi \), each student would make an independent best guess, or use whatever approximation the student felt appropriate. Some might use 3.14, others might extend it to five or six places, while a handful might just truncate the fraction and go with 3. More ambitious students might use string and ruler to measure the constant directly from a circular object. (Others might forget entirely and just guess 7.) Depending on what is being done with the number, the end results could be drastically different (and in some cases drastically wrong).

In the apparel industry, an important set of standard reference data are the different dimensions that make up size. To achieve a good fit, the apparel manufacturer needs accurate measurements of the human body. This is called anthropometric data. The first standard set of body dimensions was compiled by the National Bureau of Standards (NBS, now NIST) in the 1950's. In 1983, the Department of Commerce withdrew these voluntary standards. ASTM took over responsibility. The D-13.55 Body Measurement for Apparel Sizing sub-committee of ASTM has published standard tables of measurements for ladies26, infants27, and women over fifty-five28. Sizing standards for children, men, and large women are in different stages of committee review. With the exception of the sizing for women over 55, all of these standard tables are based on the original anthropometric survey conducted by NBS. D-13.55 is currently trying to rally industry support to update the anthropometric survey to reflect the changing population of the country. Internationally, ISO TC 133 has an international standard of anthropometric data29 and sizing.

From surveys of body measurements, standards for actual sizing of garments are derived. NBS had developed close to twenty voluntary apparel sizing standards which it published in the late 1960s. These covered all the most common types of apparel, from shirts to gloves. Although girls and women were part of the anthropometric survey, there were no voluntary standards relating specifically to women’s clothing. The NBS-sizing standards were withdrawn in 1983. On an international level, ISO TC 133 publishes ten standards relating to clothing size for both sexes. A bibliography dealing with apparel sizing was published by NIST in 199430.

---

26 ASTM D 5585 - 93. “Standard Table of Body Measurements for Adult Female Misses Figure Type Size 2-20.”
27 ASTM D 4910 - 89. “Standard Table of Body Measurements for Infants, Ages 0 to 18 Months.”
28 ASTM D 5586 - 94. “Standard Tables of Body Measurements for Women Aged 55 and Older (All Figure Types).”
30 Lee 1, 1994.
Although the NBS anthropometric data and sizing recommendations were valuable, some larger manufacturers have done work to improve the fit of their garments for their customer population. Of the companies in the U.S., Sears, Roebuck and Company, Inc. has the distinction of doing the most body size and clothing fit research.\textsuperscript{31} With the knowledge they have gained, they publish pages of details on sizing and fitting of garments. Although Sears has placed special emphasis on this in the past, reducing returns and increasing customer satisfaction through improving the way apparel fits remains a goal of all clothing manufacturers.

6.2 SRM

Standard reference materials are physical artifacts that are used for direct comparison with the sample being evaluated. The reference material is accepted as a standard for the property it exemplifies. SRMs are often used when dealing with qualitative aspects of an item, such as color or texture. ("Qualitative aspects," as used here, refers to those properties that are generally not measured by the industry directly due to technology limitations. For example, as technology advances, measurements of texture may be more scientifically conducted than by a comparison with known textures, as it is generally done in the textile industry today.) In order to have some degree of consistency and control over properties, the properties must be converted to a quantitative base. This is done by selecting an arbitrary point of reference which the property of a particular physical artifact exudes. Then samples may be measured relative to the "standard," consequently providing an objective measurement of the "qualitative" property.

Many, if not most, of the pertinent properties of fibers, textiles, and apparel are qualitative. However, many of these properties can be quantified through a certain method of testing. A few can not. As mentioned earlier, a large percentage of the test methods relating to the fiber and textile sectors relate to colorfastness. AATCC has developed scales for evaluating color change (mentioned before), as well as transference\textsuperscript{32} and staining\textsuperscript{33} reference standards. These SRMs are directly compared with the sample that has been through the test procedure (and also a control sample in tests relating to color change).

Another type of SRM which warrants mention is the model form. Model forms are actual molds of the human body used to check sizing for apparel. NBS made standard model forms for girls', boys', and toddlers' apparel of different sizes. These were developed in conjunction with the anthropometric survey discussed above in Section 6.1. Although these may be used for reference, apparel manufacturers have their own model forms for all types of people and sizes.

6.3 Terminology

The largest number of reference standards developed for the FTA industry relate to vocabulary and definitions. Standard terminology is very important because it facilitates communication. Since some words have multiple meanings, and there are many ways to describe or designate a certain object, discussion can often become obfuscated. Having precise definitions for key items and ideas in a field has always been the responsibility of that area's standards organizations. The FTA industry is no exception.

The task of publishing definitions and vocabulary on an international level has been undertaken by ISO. There are approximately forty-five ISO standards which define terminology for everything

\textsuperscript{31} Hudson, pp. 121-122. 1983.
from stitches\textsuperscript{34} to fibers\textsuperscript{35}. Some of the standards which fall into this category deal with words, while a slightly smaller number define some physical aspect of a piece of equipment, such as which side is left and which is right\textsuperscript{36}. ISO's terminology standards are most heavily concentrated in the area of textile machinery, where there are many different types of machines, each with a plethora of parts that may need definitions to refer to them.

ASTM has written roughly fifteen standards defining terminology for the FTA industry. Over half of these standards deal with textiles (yarns and fabrics) and textile properties, while a smaller number deal with the textile manufacturing and apparel sewing processes. A few of the documents apply to labeling of apparel. There is a terminology specifically for wool\textsuperscript{37}, but not for the other fibers. This may be because wool requires a lot of processing before it can be spun into yarn. Dealing with plant fibers such as cotton and flax, is simpler. One standard of special interest to the apparel sector defines terminology for apparel sizing\textsuperscript{38}. Overall, these documents seem to cover a good portion of the industry.

7 SUMMARY

The primary purpose of this survey was to identify the standards that apply to the U.S. FTA industry. To compete effectively in the global marketplace, the FTA industry must operate as efficiently as possible. By developing and adopting new standards where they are needed, and improving existing standards where possible, many benefits in terms of reduced wait time and elimination of unnecessary effort can be realized by the industry as a whole.

As can be seen by a perusal of the appendix, the number of standards related to the FTA industry is voluminous. The intent of this paper was to bring together in one document a listing of the standards and standards' organizations associated with the FTA industry. That compilation represents a first step to determine where to concentrate resources on further standards' development.

Industry feedback is necessary to draw conclusions concerning the prioritization of future standards' efforts. For example, in what parts of the FTA manufacturing process are the current standards effective? What is it about those standards and the way they are implemented that makes them effective? Where does there seem to be a lack of unity in standards—where different standards are used by different people for the same purpose? The answers to these and other questions can provide insight into where standards are helping and where they are holding back the FTA industry, and how improvement of the standards can make the FTA industry more competitive.

\textsuperscript{36} ISO 92:1976. "Textile Machinery and Accessories — Spinning Machinery — Definition of Side (Left or Right)."
\textsuperscript{37} ASTM D 4845 - 89. "Terminology Relating to Wool."
APPENDICES

A REFERENCES


39 Reports from the National Institute of Standards and Technology are available from the National Technical Information Service, Springfield, VA 22161.


B FTA STANDARDS ORGANIZATIONS

The following is a list of organizations publishing and/or developing standards and specifications related to the FTA industry. This listing of organizations is intended to save time by bringing them together in one place. In addition to the contact information, a short description and sometimes notes are included beside each listing.

American Apparel Manufacturers Association (AAMA)
2500 Wilson Blvd., Suite 301
Arlington, VA 2201
(703) 524-1864
FAX: (703) 522-6741
Sanctioned by ANSI\(^{40}\) to create standards for the apparel sector of the FTA Industry. Responsible for TALC/SAFLINC voluntary integration standards.

American Association of Textile Chemists and Colorists (AATCC)
One Davis Drive
P.O. Box 12215
Research Triangle Park, North Carolina 27709
(919) 549-8141
FAX: (919) 549-8933
Responsible for test methods and procedures relating to physical and chemical properties of textiles. Sanctioned by ANSI.

American Leather Chemists Association (ALCA)
Tanners Bldg.
University of Cincinnati-Loc. 14
Cincinnati, Ohio 45221
(513) 556-1197
FAX: (513) 556-2377
Publishes test methods for evaluating raw leather and leather products. Most standards adopted by ASTM.

American National Standards Institute (ANSI)
11 W. 42nd Street, 13th Floor
New York, New York 10036
(212) 642-4900
FAX: (212) 398-0023
Sanctions standards from industry organizations in all fields for use on a national level.

American Society for Testing and Materials (ASTM)
1916 Race Street
Philadelphia, Pennsylvania 19103-1187
(215) 299-5585
FAX: (215) 977-9679
Publishes standards covering many different materials. D-13 Committee responsible for textiles. Uses ALCA standards for leather.

American Textile Manufacturers Institute, Inc. (ATMI)
1801 K Street, NW, Suite 900
Washington, D.C. 20006
(202) 862-0500
FAX: (202) 862-0570
Responsible for FASLINC standards.

\(^{40}\) "Sanctioned by ANSI" means that many or most of the standards they publish are approved and adopted by ANSI as U.S. national standards.
International Organization for Standardization (ISO)
1, rue de Varembé
Case postale 56
CH-1211 Genève 20
Switzerland
+ 41 22 749 01 11
FAX: + 41 22 733 34 30

National Fire Protection Association
One Batterymarch Park
P.O. Box 9101
Quincy, Massachusetts 02269-9101
(617) 770-3000
FAX: (617) 770-0700

SAE International (SAE)
400 Commonwealth Drive
Warrendale, Pennsylvania 15096-0001
(412) 776-4841
FAX: (412) 776-4026

Uniform Code Council
8163 Old Yankee Road, Suite J
Dayton, Ohio 45458
(513) 435-3870

The following organizations are not directly involved in writing standards, but serve other important capacities related to FTA standards.

American Textile Partnership (AMTEX)
Laboratory Program Office
Pacific Northwest Laboratory
P.O. Box 999
Richland, WA 99352
(509) 375-2306

Industry Program Office
P.O. Box 4670
Wilmington, DE 19807
(302) 999-6733
FAX: (302) 999-6736

National Institute of Standards and Technology (NIST)
Manufacturing Systems Integration Division
Room A127, Bldg. 220
Gaithersburg, Maryland 20899
(301) 975-3508
FAX: (301) 258-9749

Standards relating to almost all fields. Members from 100 countries. 182 technical committees (TCs), 630 subcommittees. TCs of interest include 38 - Textiles, 72-Textile Machinery, 94 - Protective Clothing, and 133 - Sizing Systems.

Responsible for standards and codes relating to fire safety. These include specifications for protective clothing (primarily for fire fighting).

Publishes specifications for high-performance textiles such as aramid-fiber.

Responsible for UCS and VICS retail EDI standards.

Collaboration of FTA industry and DOE. Develops technologies to address industry needs. Helps industry to optimize product quality and market responsiveness while minimizing costs and environmental impacts.

AMTEX projects are coordinated through the Laboratory Program office (of DOE) and the Industry Program Office.

Current efforts include the Apparel Product Data Exchange Standard (APDES) project.

C FTA STANDARDS LISTINGS

The following is a listing of FTA standards obtained from the organizations listed in Appendix B. The listings were obtained when possible from the organizations that issue the standards. The listings have been reformatted so that they will be consistent across the standards organizations. For the most recent information or to purchase any of these standards, contact the appropriate organization directly. Information for contacting any of these organizations can be found in Appendix B: FTA Standards Organizations.

C.1 AAMA Standards

The American Apparel Manufacturers Association is in the process of creating and publishing a number of standards which are important to the integration of apparel manufacturing. The standards which have been generated thus far are the following:

C.2 AATCC Test Methods and Procedures

The standards listed are organized first according to the following categories:

BIOLOGICAL PROPERTIES
COLORFASTNESS
DYEING PROPERTIES
EVALUATION PROCEDURES
IDENTIFICATION AND ANALYSIS
PHYSICAL PROPERTIES

Within each category standards are listed in numerical order, according to their identification number in the left column. All standards are test methods unless otherwise noted.

BIOLOGICAL PROPERTIES

24-1993 Insects, Resistance of Textiles to, p. 75.

COLORFASTNESS

3-1989 Colorfastness to Bleaching with Chlorine, p. 19.
6-1994 Colorfastness to Acids and Alkalis, p. 21.
11-1989 Colorfastness to Carbonizing, p. 28.
16-1993 Colorfastness to Light, p. 33.
61-1994 Colorfastness to Laundering, Home and Commercial; Accelerated, p. 94.
116-1994 Colorfastness to Degumming, p. 192.

AATCC Test Methods and Procedures

126-1991 Colorfastness to Water (High Humidity) and Light: Alternate Exposure, p. 215.
129-1990 Colorfastness to Ozone in the Atmosphere under High Humidities, p. 219.
131-1990 Colorfastness to Pleating; Steam Pleating, p. 30.
132-1993 Colorfastness to Dry-cleaning, p. 225.
139-1989 Colorfastness to Light; Detection of Photochromism, p. 241.
157-1990 Colorfastness to Solvent Spotting; Perchloroethylene, p. 284.
177-1993 Colorfastness to Light at Elevated Temperature and Humidity; Water Cooled Xenon Lamp Apparatus, p. 336.

DYEING PROPERTIES

141-1994 Compatibility of Basic Dyes for Acrylic Fibers, p. 245.
159-1994 Transfer of Acid and Premetallized Acid Dyes on Nylon, p. 288.

EVALUATION PROCEDURES

Evaluation Procedure 3 Chromatic Transference Scale, p. 351.
IDENTIFICATION AND ANALYSIS

78-1989  Ash Content of Bleach Celluloid Textiles, p. 105.
82-1989  Fluidity of Dispersion of Cellulose from Bleached Cotton Cloth, p. 108.
97-1989  Extractable Content of Greige and/or Prepared Textiles, p. 141.
110-1989  Whiteness of Textiles, p. 163.
144-1992  Alkali in We Processed Textiles: Total, p. 254.
168-1992  Chelating Agents: Active Ingredient Content of Poly amino polycarboxylic Acids and Their Salts; Copper PAN Method, p. 311.

PHYSICAL PROPERTIES

27-1989  Wetting Agents, Evaluation of Rewetting Agents, p. 82.
43-1989  Wetting Agents for Mercerization, p. 93.
76-1989  Electrical Resistivity of Fabrics, p. 103.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>115-1989</td>
<td>Electrostatic Clinging of Fabrics: Fabric to Metal Test, p. 188.</td>
</tr>
<tr>
<td>136-1989</td>
<td>Bond Strength of Bonded and Laminated Fabrics, p. 236.</td>
</tr>
<tr>
<td>137-1989</td>
<td>Rug Back Staining of Vinyl Tile, p. 239.</td>
</tr>
<tr>
<td>143-1992</td>
<td>Appearance of Apparel and Other Textile End Products After Repeated Home Laundering; Text, p. 249.</td>
</tr>
<tr>
<td>1114-1989</td>
<td>Chlorine, Retained, Tensile Loss: Multiple Sample Method, p. 186.</td>
</tr>
<tr>
<td>188C-1992</td>
<td>Retention of Creases in Fabrics after Repeated Home Laundering, p. 119.</td>
</tr>
</tbody>
</table>
C.3 ALCA Standards

This standards listing contains the names and numbers of all ALCA’s test methods and definitions. Most of them related to leather in general, and a few specifically apply to leather for footwear purposes. Some of these standards have been adopted and re-published by ASTM. The names of ALCA/ASTM standards are followed by their ASTM document number (in parentheses).

A1 Analysis of Vegetable Tanning Materials - General (ASTM D4899)
A5 Extraction of Raw and Spent Materials
A6 Moisture in Raw and Spent Materials
A10 Preparation of Solution of Liquid Extracts (ASTM D4901)
A11 Preparation of Solution of Solid, Pasty and Powdered Extracts (ASTM 4905)
A12 Cooling of Analytical Solutions (ASTM D4904)
A13 Evaporation and Drying of Analytical Solutions (ASTM 4902)
A20 Total Solids and Water (ASTM D4903)
A21 Soluble Solids and Insolubles
A22 Nontannins and Tannin
A25 Analysis of Tannery Liquors
A30 Sugar in Tanning Materials
A31 Method for Copper and Iron in Tanning Materials
A40 Color Tests with Sheepskin Skiver
A50 Lignosulfonates (Sulfite Cellulose) (ASTM D4900)
A60 Official Certification
B1 Analysis of Vegetable-Tanned Leathers - General
B2 Preparation of Sample for Analysis (ASTM D2813)
B3 Moisture (ASTM D3790)
B4 Hexane Extract of Leather (ASTM D2876)
B5 Nitrogen Content (Kjeldahl) and Hide Substance (ASTM D2868)
B8 Water-Soluble Matter of Vegetable-Tanned Leather (ASTM D2876)
B9 Soluble Non Tannin and Uncombined Tannin
B10 Glucose
B11 Insoluble Ash of Vegetable-Tanned Leather (ASTM D2875)
B12 Combined Tannin and Degree of Tannage
B15 Total Ash in Leather (ASTM D2617)
B16 Magnesium as Epsom Salts
B20 pH of Water (ASTM 2810)
B30 Official Certification
C1 Determination of Chromium in Chrome Tanning Liquors (ASTM D3898)
C5 Determination of Acidity of Chrome Tanning Liquors (ASTM D3813)
C10 Calculation Basicity of Chrome Tanning Liquors (ASTM D3897)
C11 Determination of pH of Chrome Tanning Liquors (ASTM D2815)
D1 Preparation of Composite Sample for Chemical Tests (ASTM D2813)
D5 Mineral Leathers - General
D10 Chromic Oxide in Leather (Perchloric Acid Oxidation) (ASTM 2807)

43 Methods of Sampling and Analysis. 1994.
<table>
<thead>
<tr>
<th>Code</th>
<th>Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D20</td>
<td>Sulfates (Total, Neutral and Combined Acid) (ASTM D1655)</td>
</tr>
<tr>
<td>D21</td>
<td>Total Chlorides (D4563)</td>
</tr>
<tr>
<td>D30</td>
<td>Sulfate Basicity (ASTM D4654)</td>
</tr>
<tr>
<td>D35</td>
<td>Acidity (pH) (ASTM D2810)</td>
</tr>
<tr>
<td>E1</td>
<td>Conditioning Leather and Leather Products for Testing (ASTM D1610)</td>
</tr>
<tr>
<td>E2</td>
<td>Measuring Area of Leather Test Specimens (ASTM D2346)</td>
</tr>
<tr>
<td>E3</td>
<td>Measuring Thickness of Leather Units (ASTM D1814)</td>
</tr>
<tr>
<td>E4</td>
<td>Measuring Thickness of Leather Test Specimens (ASTM D1813)</td>
</tr>
<tr>
<td>E5</td>
<td>Width of Leather (ASTM D1516)</td>
</tr>
<tr>
<td>E10</td>
<td>Tongue Tear Strength (ASTM D1704)</td>
</tr>
<tr>
<td>E11</td>
<td>Buckle Tear Strength (ASTM D1813)</td>
</tr>
<tr>
<td>E12</td>
<td>Stitch Tear Strength, Single Hole (ASTM D4786)</td>
</tr>
<tr>
<td>E13</td>
<td>Stitch Tear Strength, Double Hole (ASTM D1705)</td>
</tr>
<tr>
<td>E14</td>
<td>Bursting Strength of Leather by the Ball Method (ASTM D2207)</td>
</tr>
<tr>
<td>E15</td>
<td>Tensile Strength of Leather (ASTM D2209)</td>
</tr>
<tr>
<td>E16</td>
<td>Breaking Strength of Leather by the Grab Method (ASTM 2208)</td>
</tr>
<tr>
<td>E17</td>
<td>Elongation of Leather (ASTM 2211)</td>
</tr>
<tr>
<td>E30</td>
<td>Water Absorption (Static) of Leather (ASTM D1815)</td>
</tr>
<tr>
<td>E32</td>
<td>Permeability to Water Vapor (ASTM D5052)</td>
</tr>
<tr>
<td>E40</td>
<td>Piping</td>
</tr>
<tr>
<td>E41</td>
<td>Grain Cracking</td>
</tr>
<tr>
<td>E42</td>
<td>Cold-Crack Resistance of Upholstery Leather (ASTM D1912)</td>
</tr>
<tr>
<td>E43</td>
<td>Stiffness</td>
</tr>
<tr>
<td>E44</td>
<td>Staining</td>
</tr>
<tr>
<td>E45</td>
<td>Compressibility of Leather (ASTM 2213)</td>
</tr>
<tr>
<td>E46</td>
<td>Crocking (ASTM D5053)</td>
</tr>
<tr>
<td>E50</td>
<td>Fire Resistance of Leather</td>
</tr>
<tr>
<td>E52</td>
<td>Corrosion Produced by Leather in Contact with Metal (ASTM D1611)</td>
</tr>
<tr>
<td>E53</td>
<td>Colorfastness and Transfer of Color in the Washing of Leather (ASTM D2096)</td>
</tr>
<tr>
<td>E54</td>
<td>Flex Testing of Finish on Upholstery Leather (ASTM 2097)</td>
</tr>
<tr>
<td>E55</td>
<td>Dynamic Water Resistance of Shoe Upper Leather by the Dow Corning Leather Tester (ASTM 2098)</td>
</tr>
<tr>
<td>E56</td>
<td>Dynamic Water Resistance of Shoe Upper Leather by the Maeser Water Penetration Tester (ASTM 2099)</td>
</tr>
<tr>
<td>E57</td>
<td>Resistance to Wetting of Garment-Type Leathers (Spray Test) (ASTM D1913)</td>
</tr>
<tr>
<td>E58</td>
<td>Grain Crack and Extension of Leather by the Mullen Test (ASTM 2210)</td>
</tr>
<tr>
<td>E59</td>
<td>Slit Tear Resistance of Leather (ASTM D2212)</td>
</tr>
<tr>
<td>E60</td>
<td>Estimating the Thermal Conductivity of Leather with the Cencom-Fitch Apparatus (ASTM D2211)</td>
</tr>
<tr>
<td>E61</td>
<td>Resistance of Chrome-Tanned White Shoe Upper Leather to Artificial Perspiration (ASTM D2211)</td>
</tr>
<tr>
<td>E62</td>
<td>Apparent Density of Leather (ASTM D2346)</td>
</tr>
<tr>
<td>E63</td>
<td>Measuring the Relative Stiffness of Leather by Means of a Torsional Wire Apparatus (ASTM D2821)</td>
</tr>
<tr>
<td>E64</td>
<td>Measuring Break Pattern of Leather (Break Scale) (ASTM D2941)</td>
</tr>
<tr>
<td>F1</td>
<td>Soak Waters - General</td>
</tr>
<tr>
<td>F3</td>
<td>Lime Liquors - General</td>
</tr>
<tr>
<td>F5</td>
<td>Bate Waters - General</td>
</tr>
<tr>
<td>F10</td>
<td>Solids and Ash of Beamhouse Liquors</td>
</tr>
</tbody>
</table>
ALCA Standards

F20 Total Volatile Nitrogen
F21 Total Volatile Amine Nitrogen an Free Ammonia Analysis
F30 Ammonia in Bate Waters
F35 Total Caustic Alkalinity
F40 Calcium in Beamhouse Liquors
F50 Chlorides in Beamhouse Liquors
F51 Sulfides in Lime Liquors
F52 Sulfates in Beamhouse Liquors
F60 pH Values of Beamhouse Liquors
G1 Miscellaneous Tannery Materials - General
G3 Egg Yolk
G4 Lactic Acid
G5 Oxalic Acid
G6 Tannery Sugars
H1 Fats, and Oils of Animal, Vegetable and Marine Origin - General
H2 Hard Greases - General
H3 Moellon - General
H4 Compounded Oils - General
H5 Sulfonated and Sulfated Oils (ASTM D500)
H6 Commercial Soap and Soap Products
H7 Sponging Compounds - General
H8 Mineral Oil - General
H10 Specifications for Reagents and Equipment
H15 Specific Gravity of Oils and Liquid Fats (ASTM D5355)
H16 Melting Point
H17 Titer Test (ASTM 5565)
H18 Cloud and Pout Point (ASTM D5551 and D5346)
H20 Moisture and Volatile Matter (ASTM D5556)
H21 Insoluble Impurities (ASTM D5557)
H22 Ash (ASTM D5347)
H23 Sediment in Moellon
H30 Free Fatty Acids (ASTM D5555)
H31 Saponification Value (ASTM D5558)
H32 Iodine Value - Wijs Method (ASTM D5554)
H40 Moisture (ASTM D5348)
H41 Moisture and Volatile Matter (ASTM D5349)
H42 Organically Combined Sulfuric Anhydride Titration Test (ASTM D5350)
H43 Organically Combined Sulfuric Anhydride Extraction-Titration Test (for Sulfated Oils) (ASTM D5351)
H44 Organically Combined Sulfuric Anhydride Ash-Gravimetric Test (in the Presence of True Sulfonates) (ASTM D5352)
H45 Total Desulfated Fatty Matter (for Sulfated Oils) (ASTM D5353)
H46 Total Active Ingredients (ASTM D5354)
H47 Unsapinifilable Nonvolatile Matter (for Sulfated Oils) (ASTM D5553)
H48 Inorganic Salts (H48) (ASTM D5566)
H49 Total Alkalinity and Total Ammonia (ASTM D5564)
H50 Acidity as Free Fatty Acids of Acid Number in the Presence of Dark Colored Oils but in the Absence of Ammonium or Triethanolamine Soaps (Brine Method) (ASTM 5559)
H52 Acidity as Free Fatty Acids or Acid Number in the Presence of Ammonium or Triethanolamine Soaps (ASTM 5562)
H53 Neutral Fatty Matter (ASTM D5560)
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>Sampling Leather for Physical and Chemical Tests (ASTM D2813)</td>
</tr>
<tr>
<td>J2</td>
<td>Sampling Heavy Leather for Physical Tests (ASTM D2813)</td>
</tr>
<tr>
<td>J10</td>
<td>Sampling of Vegetable Materials Containing Tannin</td>
</tr>
<tr>
<td>J15</td>
<td>Sampling of Vegetable-Tanned Leathers (ASTM D2813)</td>
</tr>
<tr>
<td>J25</td>
<td>Sampling of Mineral Tanned Leather for Chemical Tests (ASTM D2813)</td>
</tr>
<tr>
<td>J30</td>
<td>Sampling of Beamhouse Liquors</td>
</tr>
<tr>
<td>J40</td>
<td>Sampling of Tannery Chemicals</td>
</tr>
<tr>
<td>J50</td>
<td>Sampling of Fats and Oils and Their Products</td>
</tr>
<tr>
<td>K1</td>
<td>Total Solids and Ash in Leather Finish (ASTM D4906)</td>
</tr>
<tr>
<td>K5</td>
<td>Nitrocellulose in Finish on Leather (ASTM D4907)</td>
</tr>
<tr>
<td>K10</td>
<td>Flexibility and Adhesion of Finish on Leather</td>
</tr>
<tr>
<td>K11</td>
<td>Tackiness of Finish on Leather (ASTM 4908)</td>
</tr>
<tr>
<td>K12</td>
<td>Method for Testing Resistance of Colored Leather to Bleeding (ASTM D5552)</td>
</tr>
<tr>
<td>L1</td>
<td>The Resistance of Leather to the Growth of Fungi</td>
</tr>
<tr>
<td>X1</td>
<td>Standards Definitions of Terms Relating to Leather</td>
</tr>
</tbody>
</table>
C.4 ASTM Textile Standards

The following standards are categorized by the ASTM volume they appear in (either 07.01 or 07.02) and are listed numerically.

**VOLUME 07.01**

D 76 - 93  Specification for Tensile Testing Machines for Textiles.
D 123 - 93a  Terminology Related to Textiles.
D 204 - 93  Methods of Testing Sewing Threads.
D 418 - 93  Methods of Testing Pile Yarn Floor Covering Construction.
D 461 - 93  Test Methods for Felt.
D 519 - 90  Test Methods for Length of Fiber in Wool Top.
D 541 - 87  Specifications for Single Jute Yarn.
D 578 - 90  Specification for Glass Fiber Strands.
D 584 - 90  Test Method for Wool Content of Raw Wool - Laboratory Scale.
D 629 - 88  Test Methods for Quantitative Analysis of Textiles.
D 861 - 89  Practice for Use of the Tex System to Designate Linear Density of Fibers, Yarn Intermediates, and Organic-Base Fibers.
D 885M - 85  Methods of Testing Tire Cords, Tire Cord Fabrics, and Industrial Filament Yarns Made from Man-Made, and Organic-Base Fibers [Metric].
D 1113 - 90a  Test Method for Vegetable Matter and Other Alkali-Insoluble Impurities in Scoured Wool.
D 1117 - 80  Methods of Testing Non-woven Fabrics.
D 1282 - 89a  Test Method for Resistance to Airflow as an Indication of Average Fiber Diameter of Wool Top, Cam, and Scoured Wool.
D 1284 - 87  Test Methods for Relaxation and Consolidation Dimensional Changes of Stabilized Knit Wool Fabrics.

---

D 1424 - 83 Test Method for Tear Resistance of Woven Fabrics by Falling Pendulum (Elmendorf) Apparatus.
D 1442 - 93 Test Method for Maturity of Cotton Fibers (Sodium Hydroxide Swelling and Polarized Light Procedures).
D 1445 - 90 Test Method for Breaking Strength and Elongation of Cotton Fibers (Flat Bundle Method).
D 1448 - 90 Test Method for Micronaire Reading of Cotton Fibers.
D 1574 - 87a Test Method for Extractable Matter in Wool and Other Fibers.
D 1576 - 90 Test Method for Moisture in Wool by Oven-Drying.
D 1577 - 90 Test Methods for Linear Density of Textile Fibers.
D 1578 - 93 Test Method for Breaking Load of Skeins.
D 1683 - 90a Test Method for Failure in Sewn Seams of Woven Fabrics.
D 1684 - 90 Practice for Lighting Cotton Classing Rooms for Color Grading.
D 1775 - 90 Test Methods for Tension and Elongation of Wide Elastic Fabrics.
D 1776 - 90 Practice for Conditioning Textile for Testing.
D 1907 - 89 Test Method for Yarn Number by the Skein Method.
D 1908 - 89 Test Method for Needle-Related Damage Due to Sewing in Woven Fabric.
D 2057 - 90 Test Method for Colorfastness of Zipper Tapes to Laundering.
D 2061 - 93 Test Methods for Strength Tests for Zippers.
D 2101 - 94 Test Methods for Tensile Properties of Single Man-Made Textile Fibers Taken from Yarns and Tows.
D 2102 - 90 Test Method for Shrinkage of Textile Fibers.
D 2130 - 90 Test Method for Diameter of Wool and Other Animal Fibers by Microprojection.
D 2165 - 90 Test Method for pH of Aqueous Extracts of Wool and Similar Animal Fibers.
D 2229 - 93a Test Method for Rubber Property - Adhesion to Steel Cord.
D 2255 - 90 Test Method for Grading Cotton Yarns for Appearance.
D 2258 - 94 Practice for Sampling Yarn for Testing.
D 2259 - 91 Test Method for Shrinkage of Yarns in Boiling Water or Dry Heat.
D 2260 - 89 Tables of Conversion Factors and Equivalent Yarn Numbers Measured in Various Numbering Systems.
D 2462 - 90 Test Method for Moisture in Wool by Distillation with Toluene.
D 2494 - 94 Test Method for Commercial Mass of a Shipment of Yarn or Man-Made Staple Fiber or Tow.
D 2497 - 80 Tolerances for Man-Made Organic-Base Filament Single Yarns.
D 2524 - 91 Test Method for Breaking Tenacity of Wool Fibers, Flat at Bundle Method - 1/8-in. (3.2 mm) Gage Length.
D 2525 - 90 Practice for Sampling Wool for Moisture.
D 2594 - 87 Test Methods for Stretch Properties of Knitted Fabrics Having Low Power.
D 2612 - 93a Test Method for Fiber Cohesion in Sliver and Top Static Tests.
D 2646 - 87 Test Methods for Backing Fabrics.
D 2654 - 89a Test Methods for Moisture in Textiles.
D 2720 - 90 Recommended Practice for Calculation of Commercial Weight and Yield of Scoured Wool, Top, and Notch for Various Commercial Compositions.
D 2724 - 87 Test Methods for Bonded, Fused, and Laminated Apparel Fabrics.
D 2812 - 88 Test Method for Non-Lint Content of Cotton.
D 2816 - 91 Test Method for Cashmere Coarse-Hair Content in Cashmere.
D 2817 - 91 Specification for Maximum Cashmere Coarse-Hair Content in Cashmere.
D 2859 - 93a Test Method for Flammability of Finished Textile Floor Covering Materials.
D 2904 - 91 Practice for Inter-laboratory Testing of a Textile Test Method that Produces Normally Distributed Data.
D 2905 - 91 Practice for Statements on Number of Specimens for Textiles.
D 2906 - 91 Practice for Statements of Precision and Bias for Textiles.
D 2969 - 92 Test Methods for Steel Wire Cords.
D 2970 - 80 Method of Testing Tire Cords, Tire Cord Fabrics, and Industrial Yarns Made from Glass Filaments.
D 2970M - 80 Method of Testing Tire Cords, Tire Cord Fabrics, and Industrial Yarns Made from Glass Filaments [Metric].
D 3025 - 86 Practice for Standardizing Cotton Fiber Test Results by Use of Calibration Cotton Standards.
D 3106 - 89 Test Method for Permanent Deformation of Elastomeric Yarns.
D 3135 - 87 Specification for Performance of Bonded, Fused, and Laminated Apparel Fabrics.
D 3136 - 94 Terminology for Permanent Care Labels for Consumer Textile and Leather Products Other Than Carpet and Upholstery.
D 3181 - 89 Practice for Conducting Wear Testing on Textile Garments.
D 3217 - 94 Test Methods for Breaking Tenacity of Man-Made Textile Fibers in Loop or Knot Configurations.
D 3218 - 93 Specification for Polyolefin Monofilaments.

VOLUME 07.02

D 3333 - 90a Practice for Sampling Man-Made Staple Fibers.
D 3374 - 89 Specification for Vinyl-Coated Glass Yarns.
D 3412 - 89 Test Method for Coefficient of Friction, Yarn to Yarn.
D 3513 - 90 Test Method for Overlength Fiber Content of Man-Made Staple Fiber.
D 3562 - 92 Performance Specification for Men's and Women's Sliver Knitted Overcoat and Jacket Fabrics.
D 3597 - 94 Specification for Woven Upholstery Fabrics - Plain, Tufted, or Flocked.
D 3655 - 93 Performance Specification for Men's and Women's Sliver Knitted Overcoat and Jacket Fabrics.
<table>
<thead>
<tr>
<th>ASTM Textile Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>D 3656 - 89</td>
</tr>
<tr>
<td>D 3660 - 90</td>
</tr>
<tr>
<td>D 3692 - 89</td>
</tr>
<tr>
<td>D 3693 - 91</td>
</tr>
<tr>
<td>D 3773 - 90</td>
</tr>
<tr>
<td>D 3774 - 89</td>
</tr>
<tr>
<td>D 3776 - 85 (1990)</td>
</tr>
<tr>
<td>D 3777 - 91</td>
</tr>
<tr>
<td>D 3783 - 94</td>
</tr>
<tr>
<td>D 3784 - 93</td>
</tr>
<tr>
<td>D 3786 - 87</td>
</tr>
<tr>
<td>D 3817 - 89</td>
</tr>
<tr>
<td>D 3818 - 92</td>
</tr>
<tr>
<td>D 3819 - 94</td>
</tr>
<tr>
<td>D 3823 - 94</td>
</tr>
<tr>
<td>D 3882 - 90</td>
</tr>
<tr>
<td>D 3883 - 90</td>
</tr>
<tr>
<td>Code</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>D 3887 - 94</td>
</tr>
<tr>
<td>D 3888 - 90</td>
</tr>
<tr>
<td>D 3936 - 80</td>
</tr>
<tr>
<td>D 3937 - 90</td>
</tr>
<tr>
<td>D 3938 - 93</td>
</tr>
<tr>
<td>D 3940 - 83</td>
</tr>
<tr>
<td>D 3990 - 93</td>
</tr>
<tr>
<td>D 3994 - 94</td>
</tr>
<tr>
<td>D 3996 - 92</td>
</tr>
<tr>
<td>D 4030 - 89</td>
</tr>
<tr>
<td>D 4032 - 94</td>
</tr>
<tr>
<td>D 4033-92</td>
</tr>
<tr>
<td>D 4034 - 92</td>
</tr>
<tr>
<td>D 4038 - 94</td>
</tr>
</tbody>
</table>
D 4114 - 92a Performance Specification for Woven Flat Lining Fabrics for Women's and Girls' Apparel.
D 4119 - 92  Performance Specification for Men's and Boys' Knitted Dress Shirt Fabrics.
D 4120 - 93  Test Method for Fiber Cohesion in Roving, Sliver, and Top (Dynamic Tests).
D 4151 - 92  Test Method for Flammability of Blankets.
D 4153 - 82  Performance Specification for Men's, Women's and Children's Woven Handkerchief Fabrics.
D 4238 - 90  Test Method for Electrostatic Propensity of Textiles.
D 4268 - 83  Methods of Testing Fiber Ropes.
D 4389 - 89  Specification for Finished Glass Fabrics Woven from Rovings.
D 4390 - 93  Practice for the Evaluation of the Performance of Terry Bathroom Products for Household Use.
D 4391 - 93a Terminology Relating to the Burning Behavior of Textiles.
D 4393 - 94  Test Method for Strap Peel Adhesion of Reinforcing Cords or Fabrics to Rubber Compounds.
D 4466 - 85 Terminology for Multicomponent Textile Fibers.
D 4467 - 94 Practice for Inter-laboratory Testing of a Textile Test Method That Produces Non-Normally Distributed Data.
D 4604 - 86 Test Methods for Measurement of Cotton Fibers by High Volume Instruments (HVI) (Motion Control Fiber Information System).
D 4605 - 86 Test Methods for Measurement of Cotton Fibers by High Volume Instruments (HVI) (Special Instrument Laboratory System).
D 4685 - 87 Test Method for Pile Retention of Corduroy Fabrics.
D 4770 - 88 Test Method for Evaluation of Man-made Fiber Batting Used as Filling in Outerwear Apparel.
D 4776 - 88 Test Method for Adhesion of Tire Cords and Other Reinforcing Cords to Rubber Compounds by H-Test Procedure.
D 4777 - 88 Test Method for Adhesion of Tire Cords and Other Reinforcing Cords to Rubber Compounds by Hot U-Test Procedure.
D 4845 - 89 Terminology Relating to Wool.
D 4846 - 88 Test Method for Resistance to Unsnapping of Snap Fasteners.
D 4848 - 94a Terminology Relating to Tensile Properties of Textiles.
D 4850 - 91 Terminology Relating to Fabric and Related Terms.
D 4851 - 88 Test Method for Coated and Laminated Fabrics for Architectural Use.
D 4855 - 91 Practice for Comparing Test Methods.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>D 4910 - 89</td>
<td>Standard Table of Body Measurements for Infants, Ages 0 to 18 Months.</td>
<td></td>
</tr>
<tr>
<td>D 4911 - 94</td>
<td>Tolerances for Man-Made Yarns Spun on the Parallel Worsted or Modified Worsted System.</td>
<td></td>
</tr>
<tr>
<td>D 4964 - 94</td>
<td>Test method for Tension and Elongation of Elastic Fabrics (Constant-Rate-of-Expansion Type Tension Testing Machine).</td>
<td></td>
</tr>
<tr>
<td>D 4965 - 89b</td>
<td>Terminology of Seam Finishes in Home Sewing.</td>
<td></td>
</tr>
<tr>
<td>D 4970 - 89</td>
<td>Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics (Martindale Pressure Tester Method).</td>
<td></td>
</tr>
<tr>
<td>D 4975 - 93</td>
<td>Test Methods for Single-Filament Tire Bead Wire Made from Steel.</td>
<td></td>
</tr>
<tr>
<td>D 5034 - 90</td>
<td>Test Method for Breaking Force and Elongation of Textile Fabrics (Grab Test).</td>
<td></td>
</tr>
<tr>
<td>D 5035 - 90</td>
<td>Test Method for Breaking Force and Elongation of Textiles Fabrics (Strip Test).</td>
<td></td>
</tr>
<tr>
<td>D 5038 - 90</td>
<td>Terminology of Textile Conversation.</td>
<td></td>
</tr>
<tr>
<td>D 5103 - 90</td>
<td>Test Method for Length and Length Distribution of Man-Made Staple Fibers (Single-Fiber Test).</td>
<td></td>
</tr>
<tr>
<td>D 5104 - 90</td>
<td>Test Method for Shrinkage of Textile Fibers (Single-Fiber Test).</td>
<td></td>
</tr>
<tr>
<td>D 5169 - 91</td>
<td>Test Method for Shear Strength (Dynamic Method) of Hook and Loop Touch Fasteners.</td>
<td></td>
</tr>
<tr>
<td>D 5170 - 91</td>
<td>Test Method for Peel Strength (&quot;T&quot; Method) of Hook and Loop Touch Fasteners.</td>
<td></td>
</tr>
<tr>
<td>D 5251 - 92</td>
<td>Practice for the Operation of the Tetrapod Walker Drum Tester.</td>
<td></td>
</tr>
<tr>
<td>D 5252 - 92</td>
<td>Practice for the Operation of the Hexapod Drum Tester.</td>
<td></td>
</tr>
<tr>
<td>D 5253 - 92</td>
<td>Terminology of Writing Care Instructions and General Refurbishing Procedure for Textile Floor Coverings and Textile Upholstered.</td>
<td></td>
</tr>
<tr>
<td>D 5344 - 93</td>
<td>Test Method for Extension Force of Partially Oriented Yarn.</td>
<td></td>
</tr>
<tr>
<td>D 5478 - 93</td>
<td>Performance Specification for Woven and Knitted Shower Curtains for Institutional and Household Use.</td>
<td></td>
</tr>
<tr>
<td>D 5417 - 93</td>
<td>Practice for the Operation of the Vettermann Drum Tester.</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>D 5426 - 93</td>
<td>Practice for the Visual Inspection and Grading of Fabrics Used for Inflatable Restraints.</td>
<td></td>
</tr>
<tr>
<td>D 5427 - 93</td>
<td>Practice for the Accelerated Aging of Inflatable Restraint Fabrics.</td>
<td></td>
</tr>
<tr>
<td>D 5428 - 93</td>
<td>Practice for Evaluating the Performance of Inflatable Restraint Modules.</td>
<td></td>
</tr>
<tr>
<td>D 5429 - 93a</td>
<td>Practice for the Pre-treatment of Backing Fabrics Used in Textile Conservation Research.</td>
<td></td>
</tr>
<tr>
<td>D 5430 - 93</td>
<td>Test Methods for Visually Inspecting and Grading Fabrics.</td>
<td></td>
</tr>
<tr>
<td>D 5431 - 93</td>
<td>Performance Specification for Woven and Knitted Sheeting Products for Institutional and Household Use.</td>
<td></td>
</tr>
<tr>
<td>D 5432 - 93</td>
<td>Performance Specification for Blanket Products for Institutional and Household Use.</td>
<td></td>
</tr>
<tr>
<td>D 5433 - 93</td>
<td>Performance Specification for Towel Products for Institutional and Household Use.</td>
<td></td>
</tr>
<tr>
<td>D 5489 - 93</td>
<td>Guide for Care Symbols for Permanent Care Labels On Consumer Textile Products.</td>
<td></td>
</tr>
<tr>
<td>D 5497 - 94</td>
<td>Terminology Relating to Buttons.</td>
<td></td>
</tr>
<tr>
<td>D 5585 - 93</td>
<td>Standard Table of Body Measurements for Adult Female Misses Figure Type Size 2-20.</td>
<td></td>
</tr>
<tr>
<td>D 5586 - 94</td>
<td>Standard Tables of Body Measurements for Women Aged 55 and Older (All Figure Types).</td>
<td></td>
</tr>
</tbody>
</table>
C.5 Government/Military Standards and Specifications

Because of its size and diversity of content, the military and federal standards and specifications are organized into two levels of subjects. Standards within each subgroup are listed numerically. This section is broken into the following groups and subgroups:

NOTIONS/TENTS
   Notions & Apparel Findings
   Tents/Tarpaulins/Covers

CLOTHING/INDIVIDUAL EQUIPMENT
   General Information/Applications
   Outerwear, Men's
   Outerwear, Women's
   Food Handler's/Processor's
   Special Pockets Garments
   Surgical Gown/Glove/Mask
   Nonsurgical Medical & Veterinary
   Underwear & Nightwear, Men's
   Underwear & Nightwear, Women's
   Hosiery, Handwear & Clothing Accessories, Men's
   Hosiery, Handwear & Clothing Accessories, Women's
   Children's & Infant's Apparel & Accessories
   Luggage
   Clothing/Individual Equipment

NOTIONS/TENTS

<table>
<thead>
<tr>
<th>KSC-SPEC-P-0016 REV A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Requirements for Garment Snap Fastener, Specification for. FSC PACK</td>
</tr>
<tr>
<td>Label: for Clothing, Equipage, and Tentage, (General Use). FSC 8315</td>
</tr>
<tr>
<td>Pin, Safety. FSC 8315</td>
</tr>
<tr>
<td>Clothing Components for Military Uniforms. FSC 8315</td>
</tr>
<tr>
<td>Needles, Except Surgical, Hand. FSC 8315</td>
</tr>
<tr>
<td>Needle, Sailmaker. FSC 8315</td>
</tr>
<tr>
<td>Buttons, Tack; and Tack, Button. FSC 8315</td>
</tr>
<tr>
<td>Button, Sewing Hole, and Button, Staple, (Plastic). FSC 8315</td>
</tr>
<tr>
<td>Provisions for Evaluating Quality of Cap Crowns. FSC 8405</td>
</tr>
<tr>
<td>Headband, Sweat. FSC 4240</td>
</tr>
<tr>
<td>Buckle, Slide, Plastic. FSC 8315</td>
</tr>
<tr>
<td>Buckles; and Clips, End, Strap (for Belt, Trousers). FSC 8315</td>
</tr>
<tr>
<td>Sewing Kits. FSC 8315</td>
</tr>
<tr>
<td>Buckle and Catch, Ceremonial, Army. FSC 8315</td>
</tr>
<tr>
<td>Sweatband, Headwear, Leather. FSC 8405</td>
</tr>
<tr>
<td>Label, Garment (Woven, Rayon). FSC 8315</td>
</tr>
<tr>
<td>Pads, Shoulder and Sleeve-Head. FSC 8315</td>
</tr>
<tr>
<td>Coat Fronts. FSC 8315</td>
</tr>
<tr>
<td>Lace, Ornamental. FSC 8315</td>
</tr>
<tr>
<td>Embroidery Materials, Metallic and Synthetic Metallic. FSC 8315</td>
</tr>
</tbody>
</table>

---

### Government/Military Standards and Specifications

<table>
<thead>
<tr>
<th>MIL-F-17619E (1)</th>
<th>Frame, Service Cap (Man's). FSC 8405</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-C-17620F</td>
<td>Crown, Service Cap (Man's). FSC 8405</td>
</tr>
<tr>
<td>MIL-B-17910D</td>
<td>Buckle, Brass: for Belt, Coat, Man's. FSC 8315</td>
</tr>
<tr>
<td>MIL-C-18186D (1)</td>
<td>Crowns, Service Cap. FSC 8405.</td>
</tr>
<tr>
<td>MIL-F-20268G</td>
<td>Frame, Cap, Man's. FSC 8405</td>
</tr>
<tr>
<td>MIL-B-20269E</td>
<td>Buckles: Insignia and Plain. FSC 8315</td>
</tr>
<tr>
<td>MIL-L-20271C Valid Notice 1</td>
<td>Lace, Insignia: Ornemental. FSC 8315</td>
</tr>
<tr>
<td>MIL-B-20588F</td>
<td>Buckle, Center Bar (Military Police Belt). FSC 8315</td>
</tr>
<tr>
<td>MIL-S-22760C</td>
<td>Support Crown, Service Cap; and Support Holder. FSC 8405</td>
</tr>
<tr>
<td>MIL-C-23486B</td>
<td>Collar, Coat, Man's: Polyester/Wool, Gabardine, Blue. FSC 8315</td>
</tr>
<tr>
<td>MS35901</td>
<td>Notions and Apparel Findings FSC Class 8315. FSC 8315</td>
</tr>
<tr>
<td>MIL-B-40006D</td>
<td>Buckle, General Officers' Belt, Gold Plated. FSC 8315</td>
</tr>
<tr>
<td>MIL-B-40092D</td>
<td>Braid, Textile, Cord-Edge, Polyester. FSC 8315</td>
</tr>
<tr>
<td>MIL-F-43514B</td>
<td>Fastener, Plastic, for Equipage Items. FSC 8465</td>
</tr>
<tr>
<td>MIL-S-43993C</td>
<td>Sweatband, Headwear: Artificial Leather. FSC 8405</td>
</tr>
<tr>
<td>A-A-52067</td>
<td>Binding, Textile, Cotton, Bias-Cut. FSC 8315</td>
</tr>
<tr>
<td>A-A-55066</td>
<td>Needles, Except Surgical, Hand. FSC 8315</td>
</tr>
<tr>
<td>A-A-55187</td>
<td>Braid, Textile (Flat). FSC 8315</td>
</tr>
<tr>
<td>A-A-55190</td>
<td>Sewing Kit. FSC 8315</td>
</tr>
<tr>
<td>MIL-C-82114A</td>
<td>Coat Front: for Coats, Musicians. FSC 8315</td>
</tr>
<tr>
<td>MIL-N-87224 Valid Notice 1</td>
<td>Neck Tab, Women's, Shirts. FSC 8445</td>
</tr>
</tbody>
</table>

#### Tents/Tarpaulins/Covers

<table>
<thead>
<tr>
<th>K-P-146E INT AMD 1</th>
<th>Tarpaulins, Cotton Duck, FWW/MR. FSC 8340</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-P-500H</td>
<td>Plates, Tent, Peak and Ridge. FSC 8340</td>
</tr>
<tr>
<td>MIL-P-501P</td>
<td>Pin, Tent, Metal. FSC 8340</td>
</tr>
<tr>
<td>MIL-P-549K</td>
<td>Poles, Tent, Upright and Ridge. FSC 8340</td>
</tr>
<tr>
<td>MIL-P-608K</td>
<td>Pole Section, Tent: Upright and Adapter, Tent Pole. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-1110F</td>
<td>Tent, Assembly, M-1942. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-1111G (2)</td>
<td>Tent, Command Post, M-1945, Fire, Water, Weather and Mildew Resistant, Olive Drab, Complete. FSC 8340</td>
</tr>
<tr>
<td>MIL-F-1461H</td>
<td>Frame Sections, Tent, Maintenance. FSC 8340</td>
</tr>
<tr>
<td>MIL-S-1484E</td>
<td>Shields, Stovepipe, Tent. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-1712T</td>
<td>Tent, General Purpose, Medium. FSC 8340</td>
</tr>
<tr>
<td>MIL-P-1716H (1)</td>
<td>Pole, Tent, Telescopic, Adjustable 5 Feet to 9 Feet, Magnesium. FSC 8340</td>
</tr>
<tr>
<td>MIL-S-1743H</td>
<td>Slips, Tent Line. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-1926G</td>
<td>Tent, Mountain, Two-Man, Complete with Pins and Poles. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-1956D (1)</td>
<td>Tarpaulins, Waterproof, Special Purpose, 10 Feet Long by 8 Feet Wide. FSC 8340</td>
</tr>
<tr>
<td>MIL-P-2383H</td>
<td>Pins, Tent, Wood. FSC 8340</td>
</tr>
<tr>
<td>MIL-S-3725E Valid Notice 1</td>
<td>Shelter Half, Tent. FSC 8305</td>
</tr>
<tr>
<td>MIL-T-7249B Valid Notice 1</td>
<td>Tarpaulin, Light Weight. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-10009H</td>
<td>Tent, Kitchen, Flyproof, M-1948. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-10035K</td>
<td>Tent, Hexagonal, Light Weight, M-1950. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-10069G (2)</td>
<td>Tent, Maintenance Shelter, Fire, Water, Weather, and Mildew Resistant, Olive Drab. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-10168J</td>
<td>Tent, Frame-Type, Insulated, Sectional, with Floor, 16 Feet Wide, M1948, Complete. FSC 8340</td>
</tr>
<tr>
<td>MIL-I-10901H Valid Notice 1</td>
<td>Insect Bar: Field Type, Nylon Netting. FSC 7210</td>
</tr>
<tr>
<td>MIL-U-11224E (1)</td>
<td>Umbrella, Surveyor's (Six-Rib). FSC 8340</td>
</tr>
</tbody>
</table>

41
<table>
<thead>
<tr>
<th>MIL-T-12354F (1)</th>
<th>Tent, Arctic, 10 Man. FSC 8340</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-T-1219F</td>
<td>Tent Liner, General Purpose, Medium. FSC 8340</td>
</tr>
<tr>
<td>MIL-C-13489D</td>
<td>Cover and End Curtains; Cargo Body (for Military Vehicles). FSC 2540</td>
</tr>
<tr>
<td>MIL-T-14038K</td>
<td>Tent, General Purpose, Large. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-14056G</td>
<td>Tent Liner, General Purpose, Large, Fire, Water, and Mildew Resistant. FSC 8340</td>
</tr>
<tr>
<td>MIL-C-18680C</td>
<td>Fly, Tent: Fire, Water, Weather and Mildew Resistant. FSC 8340</td>
</tr>
<tr>
<td>MIL-C-22043</td>
<td>Covers, Coated, Nylon (for Naval Ordnance Equipment). FSC 10GP</td>
</tr>
<tr>
<td>MIL-T-40001E</td>
<td>Tent, Observing, Triangulation, Ground Type, Complete with Frame. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-40031E</td>
<td>Tent, Observing, Astronomic, Complete with Fly and Frame. FSC 8340</td>
</tr>
<tr>
<td>MIL-F-40132G</td>
<td>Frame Sections, Tent, Maintenance, Medium, Light Metal. FSC 8340</td>
</tr>
<tr>
<td>MIL-P-40148F</td>
<td>Poles, Tent, Telescopic, Adjustable, Aluminum. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-41810K</td>
<td>Tent, General Purpose, Small. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-41812H</td>
<td>Tent, Liner Sections, Frame-Type, Maintenance, Medium. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-41813F</td>
<td>Tent Sections, Frame Type, Maintenance, Medium. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-41830E</td>
<td>Tent, Vehicle Maintenance, Complete with A-Frame. FSC 8340</td>
</tr>
<tr>
<td>MIL-S-43176C</td>
<td>Screen, Latrine, Fire, Water, Weather, and Mildew Resistant Treated, O.D. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-43182D</td>
<td>Tent, Missile System Equipment Console (HAWK). FSC 8340</td>
</tr>
<tr>
<td>MIL-T-43309C</td>
<td>Tarpaulin: Cotton Duck for Wind Measuring Set. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-43333C</td>
<td>Tent Liner, General Purpose, Small and Arctic, 10 Man. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-43389 (1)</td>
<td>Tarpaulin, Cotton Duck, Olive Drab No. 7; 20 Feet by 20 Inches. FSC 8340</td>
</tr>
<tr>
<td>MIL-P-43413D</td>
<td>Poles, Tent, Light Metal, Special. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-43416C</td>
<td>Tent, Sunshield, Theodolite. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-43492C</td>
<td>Tent Sections, Frame Type, Expandable. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-43512B (1)</td>
<td>Tents, Missile System Equipment Console, (High-Power Illuminator HAWK). FSC 8340</td>
</tr>
<tr>
<td>MIL-F-43695B</td>
<td>Frame Sections, Tent, Frame Type, Expandable. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-43764A</td>
<td>Tents, Cable Splicer. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-44222A</td>
<td>Tent, Liner Sections; Insulated (Temper). FSC 8340</td>
</tr>
<tr>
<td>MIL-T-44243A (1)</td>
<td>Tent Sections, Tent, Extendable, Modular, Personnel (Temper). FSC 8340</td>
</tr>
<tr>
<td>MIL-F-44251A</td>
<td>Frame Sections, Tent, Extendable, Modular, Personnel (Temper). FSC 8340</td>
</tr>
<tr>
<td>MIL-T-44271A</td>
<td>Tents, Extendable, Modular, Personnel (Temper), Assembly Components. FSC 8340</td>
</tr>
<tr>
<td>MIL-F-44397 (1)</td>
<td>Frame, Tent, (SICPS). FSC 8340</td>
</tr>
<tr>
<td>MIL-T-44400 (1)</td>
<td>Tent, Fabric Assemblies, Standardized Integrated Command Post System. FSC 8340</td>
</tr>
<tr>
<td>MIL-P-44403</td>
<td>Passageway, Complexing Kit. FSC 8340</td>
</tr>
<tr>
<td>MIL-C-44404</td>
<td>Command Post, Tent, Standardized Integrated Command Post System. FSC 5410</td>
</tr>
<tr>
<td>MIL-C-44413</td>
<td>Cover, Nuclear, Biological, and Chemical Protective (NBC-CP). FSC 8340</td>
</tr>
<tr>
<td>MIL-F-44425</td>
<td>Frame Section, Tent, Five Soldier Crew. FSC 8340</td>
</tr>
<tr>
<td>MIL-T-44427</td>
<td>Tent, Five Soldier Crew. FSC 8340</td>
</tr>
</tbody>
</table>
**Government/Military Standards and Specifications**

MS5123 REV C Valid Notice 1 Cover, Fitted, Vehicular Body - Top. FSC 2540
A-A-55235 Tarpaulin; Cotton Duck, Camouflage Green 483; 20 Feet by 20 Inches. FSC 8340
MIL-S-55507E (2) Shelter, Electrical Equipment (With or Without Equipment), Packaging of. FSC PACK
MIL-S-55557A Notice 2 Shelter, Electrical Equipment S-3300/TRC-117(V). FSC 5410
MIL-T-82120A (1) Tarpaulins: Duck, Cotton; Fire, Water, Weather and Mildew Resistant Treated; with Carrying Bag. FSC 8340
MIL-T-82152B Tarpaulin: Duck, Cotton, Vinyl Resin Coated Both Sides, 14 Feet Long by 6 Feet Wide. FSC 8340
MIL-T-82288B Tarpaulin: Laminated, Vinyl-Nylon, Flexible. FSC 8340
MIL-T-83788 Tent, Pyramid, Survival, 3-4 Man, SRU-1/P. FSC 8340
MIL-C-83991A Cover, Polyethylene, Pallet, Cargo HCU-6/E And HCU-12/E (Use A-A-55437). FSC 3990

### CLOTHING/INDIVIDUAL EQUIPMENT

**General Information/ Applications**

MIL-HDBK-156 Glossary of Military Clothing Fabrication Terms. FSC 8430
MIL-L-35078M SUPP 1 Loads, Unit: Preparation of Semiperishable Subsistence Items: Clothing, Personal Equipment and Equipage; General Specification for. FSC PACK
MIL-C-44192A Container, Shipping and Storage, Coat (Hanger Pack). FSC 8115

**Outerwear, Men's**

BBB-C-0050 Cap, Softball. FSC 8415
MIL-STD-657A Provision for Evaluating Quality of Service Caps. FSC 8405
MIL-C-8131E (1) Cap, Utility: Cotton, Sateen, Green. FSC 8405
MIL-STD-901B Provisions for Evaluating Quality of Caps, Garrison, Men's. FSC 8405

BBB-S-1268B Valid Notice 1 Sweat Shirt. FSC 8415
BBB-S-1269B Sweat Pants. FSC 8415
MIL-STD-1391D Provisions for Evaluating Quality of Overcoats, Men's. FSC 8405

MIL-STD-1488G Provisions for Evaluating Quality of Coats, Men's Dress. FSC 8405
MIL-STD-1492C Provisions for Evaluating Quality of Men's Shirts. FSC 8405
MIL-STD-1494B Provisions for Evaluating Quality of Raincoats. FSC 8405
A-A-1626 Shirt, Men's and Women's (Long or Short Sleeve). FSC 8405
A-A-1782 Cap, Civilian, Uniform. FSC 8405
A-A-1783 Shirt, Man's (and Woman's; Long Sleeve). FSC 8415
A-A-1784 Trousers, Man's (and Woman's - Summer Weight). FSC 8415
A-A-1785 Trousers, Man's and Woman's (Winter Weight). FSC 8405
A-A-1786 Shirt, Man's (and Woman's; Short Sleeve). FSC 8415

MIL-C-1911J INT AMD 1 Cap, Camouflage Pattern. FSC 8415
MIL-S-2036J Scarf, Neckwear, Wool. FSC 8440
MIL-C-2202H Overcoat, Men's, Enlisted. FSC 8405
MIL-O-2414H Overcoat, Men's, Enlisted. FSC 8405
MIL-T-2423L Trousers, Men's (White). FSC 8405
MIL-S-3003K (1) Poncho, Wet Weather, Heavy Duty. FSC 8405
MIL-S-3007J (1) Sweater, Man's, Olive Drab. FSC 8405

43
MIL-C-3095G Cap, Service, Man's, Air Force. FSC 8405
MIL-C-3261F Cap, Garrison, Man's Air Force, Blue. FSC 8405
MIL-H-3364D Helmet, Sun. FSC 8415
MIL-S-3649F Valid Notice 1 Shirt, Man's; Long Sleeve. FSC 8405
MIL-J-7448K Jacket, Utility L-2B. FSC 8405
MIL-S-10858H Shirt, Cold Weather, Field, Wool/Nylon, Olive Green 108. FSC 8415
MIL-C-13998H Valid Notice 1 Cap, Service, Wool. FSC 8405
MIL-C-15065J Coat Fronts. FSC 8315
MIL-C-16472H Cap, Knit (Watch). FSC 8405
MIL-C-17614F Cap, Garrison, Man's. FSC 8405
MIL-S-17615E Strap, Chine (Navy and Coast Guard). FSC 8405
MIL-S-17618H Shirt, Man's, (Polyester/Cotton, Tropical, Short Sleeve).
MIL-H-19448C Valid Notice 1 Hat, Service: with Chin Strap. FSC 8405
MIL-C-19519G (1) Coat, Man's: Polyester/Wool, Gabardine; Blue. FSC 8405
MIL-S-19984E Shirt, Man's: Khaki; with Quarter Length Sleeve. FSC 8405
MIL-C-21083C (1) Coat, Man's: Service, Officers, USMC. FSC 8405
MIL-S-21088C Valid Notice 1 Coat, Man's: White; Dress (Officer's). FSC 8405
MIL-T-21704F Trousers, Cold Weather. FSC 8415
MIL-J-21708G Jacket, Cold Weather. FSC 8415
MIL-C-24918B Coat, All-Weather, Man's, W/Removable Liner. FSC 8405
MIL-C-24920A Coat, All-Weather, Man's, with Removable Liner. FSC 8405
MIL-S-24922 Sweater, Man's (Flame Retardant). FSC 8405
MIL-C-24937A Cap, Combination, Man's, (CG). FSC 8405
MIL-S-24950 Shirt, Man's, Dress White, Long Sleeve (CG). FSC 8405
MIL-H-25754B (1) Hood, Winter, Knit, Wool. FSC 8415
MIL-C-27438G Coat, Men's, Service. FSC 8405
MIL-C-27845C Valid Notice 1 Coveralls, Men's CMU-3/P. FSC 8405
MIL-T-28902B Trousers, Men's: Musicians. FSC 8405
MIL-T-28919 Valid Notice 1 Trousers, Men's: Service, Summer and Winter (Officer's). FSC 8405
MIL-T-28920A Valid Notice 1 Trousers Men's: Dress (Officer's). FSC 8405
MIL-V-28936 Valid Notice 1 Vest, Man's: Dress White (Officer's). FSC 8405
MIL-C-28950A Valid Notice 1 Coat Man's: Dress Blue (Officer's). FSC 8405
MIL-P-28958 Parka and Trousers, Wet Weather: Lightweight. FSC 8405
MIL-J-28978A Jacket, Man's: Evening Dress (Staff, Noncommissioned Officer's). FSC 8405
MIL-M-28985 Maintenance Kit: Wet Weather Clothing; Parka and Trousers. FSC 8405
MIL-C-29106B Coat, Man's, Wool, Winter. FSC 8405
MIL-C-29107C Coat, Man's, Polyester/Wool. FSC 8405
MIL-C-29109B Coveralls, Anti-Exposure. FSC 8415
MIL-T-29112C Trunks Swimmers. FSC 8415
MIL-S-29130A Shorts, Men's, Polyester/Cotton. FSC 8405
MIL-S-29149C Shirt, Man's, Polyester and Wool, Long Sleeve. FSC 8405
MIL-C-29366B Cap, Utility: Camouflage. FSC 8405
MIL-J-29370 Jacket, Man's: Lightweight. FSC 8405
MIL-C-29380D Coat, All-Weather, Men's. FSC 8405
MIL-V-29389 Vest, Man's: Scarlet, Dress (General Officer's). FSC 8405
MIL-B-29407A Belt, All Weather, Coat, Men's. FSC 8405
MIL-S-2915A Sweater; Service Wool. FSC 8405
MIL-C-29424A Coat, Man's: Polyester/Wool, Gabardine. Green (with Belt). FSC 8405
MIL-S-29428A Scarf: Headover, Wool. FSC 8440
| MIL-C-29433 | Caps, Garrison: Men's. FSC 8405 |
| MIL-J-29451A | Jacket, Men's: Intermediate Weight, Polyester/Wool. FSC 8405 |
| MIL-T-29542A | Trousers, Men's: Polyester/Wool. FSC 8405 |
| MIL-C-29632 | Coat, Men's, Polyester/Wool, Serge, Fusible (Coast Guard). FSC 8405 |
| MIL-J-29634 | Jersey, Flight Deck Crewman's (Flame Retardant). FSC 8415 |
| MIL-C-31002 | Cap, Garrison, Man's (Coast Guards). FSC 8405 |
| MIL-C-31006 INT AMD 1 | Coat, Man's. FSC 8405 |
| MIL-C-38182C | Cover, Service Cap, Man's, Water Repellant. FSC 8405 |
| MIL-P-38184C Valid Notice 1 | Parka, Extreme Cold Weather CWU-8/P. FSC 8415 |
| MIL-R-38213B Valid Notice 1 | Raincoat, Man's, Lightweight, Blue. FSC 8405 |
| MIL-T-41828H | Trousers, Men's, Polyester/Wool. FSC 8405 |
| MIL-C-41833E | Coverall, Mechanic's, Cold Weather. FSC 8415 |
| MIL-T-41834G | Trousers, Men's, Polyester and Cotton. FSC 8415 |
| MIL-B-43172E | Beret, Man's, Wool. FSC 8405 |
| MIL-L-004335F INT AMD 1 | Liner, Wet Weather Poncho. FSC 8405 |
| MIL-S-43355B Valid Notice 1 | Strap Chin; and Suspension Assembly, Chinstrap. FSC 8470 |
| MIL-H-43371B | Hat, Sun, Reversible. FSC 8415 |
| MIL-C-43415C | Cap, Service, Military Police, White. FSC 8405 |
| MIL-C-43419E | Cap, Garrison, Men's Polyester/Wool, Army Green 344. FSC 8405 |
| MIL-C-43455J | Coat, Cold Weather, Field. FSC 8415 |
| MIL-T-43497D (1) | Trousers, Cold Weather, Field, Nylon and Cotton. FSC 8415 |
| MIL-L-43498D | Liner, Cold Weather Trousers, Field. FSC 8415 |
| MIL-R-43518C | Raincoats, Men's, Quarpel. FSC 8405 |
| MIL-L-43536F | Liner, Cold Weather Coat. FSC 8415 |
| MIL-O-4357C | Overcoat, Man's, Army Green 44, with Removable Liner. FSC 8405 |
| MIL-P-0043700D INT AMD 1 | Poncho, Wet Weather. FSC 8405 |
| MIL-C-43724C Valid Notice 1 | Cap - Hot Weather Olive Green 507. FSC 8415 |
| MIL-P-43907D | Parka and Trousers, Wet Weather. FSC 8405 |
| MIL-S-43929B Valid Notice 1 | Shirt, Utility, (Durable Press). FSC 8405 |
| MIL-T-43932C Valid Notice 1 | Trousers, Utility, (Durable Press). FSC 8405 |
| MIL-M-43946A Valid Notice 1 | Maintenance Kit: Wet Weather Clothing. FSC 8405 |
| MIL-T-43957D | Trousers, Men's, Dress, Wool and Polyester/Wool. FSC 8405 |
| MIL-S-43959A | Sweat Shirt: Zipper Front. FSC 8415 |
| MIL-S-43960 Valid Notice 1 | Sweat Pants: Leg Zipper. FSC 8415 |
| MIL-B-43965A Valid Notice 1 | Bag, Wet Weather Clothing: (Parka and Trousers). FSC 8465 |
| MIL-J-43967C | Jersey, Reversible. FSC 8415 |
| MIL-C-44030B | Coat, All-Weather, Man's, Black, with Removable Liner. FSC 8405 |
| MIL-S-44039C | Shirt, Man's, Long Sleeve, Polyester/Cotton, Army Green 415, Durable Press. FSC 8405 |
| MIL-S-44041C | Shirt, Man's, Short Sleeve, Polyester/Cotton, Army Green 415, Durable Press. FSC 8405 |
| MIL-T-44047E | Trousers, Camouflage Pattern, Combat. FSC 8415 |
| MIL-P-44087B INT AMD 1 | Parka, Night Camouflage, Desert. FSC 8415 |
| MIL-L-44089A | Liner, Night Camouflage Parka: Desert. FSC 8415 |
| MIL-T-44094B INT AMD 1 | Trousers, Night Camouflage, Desert. FSC 8415 |
| MIL-H-44105B | Hats, Sun, Hot Weather. FSC 8415 |
| MIL-C-44211A (1) | Coats, Men's, Tropical and Serge, Polyester/Wool, Army Green 344, Fusible. FSC 8405 |
Government/Military Standards and Specifications

MIL-S-44212A  Sweatshirt, Hooded, Physical Fitness Uniform (PFU). FSC 8415
MIL-T-44214A  T-Shirt, Physical Fitness Uniform (PFU). FSC 8415
MIL-S-44215A  Sweatpants, Physical Fitness Uniform (PFU). FSC 8415
MIL-S-44290  Smock, Man's: Hospital Duty Uniform (HDU). FSC 8405
MIL-T-44291  Trousers, Man's: Hospital Duty Uniform (HDU). FSC 8405
A-A-50358B  Coveralls, Disposable, General Purpose. FSC 8415
A-A-50366  Sweater, Man's Modacrylic/Wool. FSC 8405
A-A-50367A  Coat, Man's, All Weather, with Removable Liner. FSC 8405
A-A-50369  Cap, Knit (Watch). FSC 8405
A-A-50526B  Hat, Service: with Chin Strap. FSC 8405
A-A-50527  Trunks, General Purpose. FSC 8415
A-A-50528A  Coat, Shooter's Green. FSC 8415
A-A-52112B  Shirts, Man's. FSC 8405
A-A-52115B  Sweater, Man's, Olive Drab. FSC 8405
A-A-55085  Trousers, Men's, Polyester/Cotton. FSC 8405
A-A-55086  Trousers, Men's, Undress, Polyester/Cotton (CG). FSC 8405
A-A-55091  Shirt, Man's, Polyester and Wool, Long Sleeve. FSC 8405
A-A-55095  Coveralls, Utility. FSC 8405
A-A-55108  Hat, Service (White). FSC 8405
A-A-55110A  Coat, All-Weather, Man's, W/Removable Liner. FSC 8405
A-A-55178  Coveralls, Men's, Cotton, Sateen. FSC 8405
A-A-55180  Cap, Utility, Cotton, Sateen, Green. FSC 8405
A-A-55184  Beret, Man's, Wool. FSC 8405
A-A-55185  Trousers, Men's (White). FSC 8405
A-A-55186  Poncho, Wet Weather, Heavy Duty. FSC 8405
A-A-55219  Trousers, Men's (Enlisted, White). FSC 8405
A-A-55222  Belt, Man's Coat. FSC 8405
A-A-55229  Raincoat, Man's. FSC 8405
A-A-55239  Sweater, Service Wool. FSC 8405
A-A-55294  Cap, Camouflage Pattern. FSC 8415
MIL-C-82114A  Coat Front: for Coats, Musicians. FSC 8315
MIL-T-82139A  Tabard: USMC Band, Embroidered. FSC 8345
MIL-C-82145A Valid Notice 1  Coat, Man's: Special Full Dress Scarlet, U.S. Marine Band, Musicians. FSC 8405
MIL-C-82149A Valid Notice 1  Coat, Man's: Full Dress, Scarlet, U.S. Marine Band, Musician. FSC 8405
MIL-S-82155B  Stripe, Trousers, Dress. FSC 8455
MIL-C-82156B  Coat, Man's, Scarlet, Drum and Bugle Corps, Musician. FSC 8405
MIL-H-82157A  Hat, Rain: Man's, Cotton, Rubber Coated; Olive Green 107. FSC 8405
MIL-T-82161A Valid Notice 1  Trousers, Men's: Evening Dress (Officer's). FSC 8405
MIL-T-82163B  Trousers, Men's: Dress, White and Special Mess, Black. FSC 8405
MIL-C-82168A Valid Notice 1  Coat, Man's, Full Dress, Summer and winter, Scarlet, U.S. Marine Band, Drum Major. FSC 8405
MIL-C-82172B (1)  Coat, Man's: Full Dress, U.S. Marine Band Officer's. FSC 8405
MIL-J-82193B  Jacket, Man's: Evening Dress (Officer's). FSC 8405
MIL-O-82230D  Overcoat, Man's: Officer's Type. FSC 8405
MIL-T-82251E  Trunks, General Purpose. FSC 8415
MIL-J-82293D  Jacket, Utility, Man's, Blue. FSC 8405
MIL-C-87000B (1)  Coveralls, Men's. FSC 8405
Government/Military Standards and Specifications

MIL-C-87026A Coat, Man's, Polyester/Wool, Serge (Coat Guard). FSC 8405
MIL-J-87035C Jumper, Man's (Blue, Dress). FSC 8405
MIL-J-87037D Jumper, Man's, White. FSC 8405
MIL-T-87038D Trousers, Men's (Blue, Enlisted). FSC 8405
MIL-H-87041B Hat, Service (White). FSC 8405
MIL-S-87046A Shirt, Utility, Man's, Polyester/Cotton (CG). FSC 8405
MIL-T-87047A Trousers, Men's Polyester/Wool Serge (CG). FSC 8405
MIL-S-87060B Shirts, Utility, Men's Chambray. FSC 8405
MIL-T-87062B Trousers, Utility, Men's Denim. FSC 8405
MIL-T-87067C Trousers, Men's, (Enlisted, White). FSC 8405
MIL-C-87093B Coveralls, Flame Resistant (Aramid). FSC 84115
MIL-P-97098 Parka, Wet Weather. FSC 8405
MIL-T-87099 Trousers, Wet Weather. FSC 8405
MIL-C-87110A Coat, All-Weather: Man's, Blue, with Removable Liner. FSC 8405
MIL-C-87165 Valid Notice 1 Collar, Jacket, Detachable CWU 63/P. FSC 8315
MIL-S-87214B Shirts, Man's Short and Long Sleeves Polyester/Cotton (Durable Press) and Long Sleeves, Polyester/Wool. FSC 8405
MIL-J-87250 Jacket, Man's; Lightweight with Removable Liner. FSC 8405

Outerwear, Women's
MIL-STD-656C Provisions for Evaluating Quality of Slacks, Women's. FSC 8410
MIL-STD-657A Provisions for Evaluating Quality of Service Caps. FSC 8405
MIL-STD-902A Provisions for Evaluating Quality of Caps, Garrison, Women's. FSC 8410
MIL-STD-984 Chg Notice 1 Size Labeling for Women's Uniform Clothing, Provisions for. FSC 8410
MIL-STD-1608C Notice 1 Provisions for Evaluating Quality of Coats, Women's, Dress. FSC 8410
MIL-STD-1609C Provisions for Evaluating Quality of Women's Skirts. FSC 8410
A-A-1626 Shirt, Man's and Women's (Long or Short Sleeve). FSC 8405
A-A-1782 Cap, Civilian, Uniform. FSC 8405
A-A-1783 Shirt, Man's (and Woman's; Long Sleeve). FSC 8415
A-A-1784 Trousers, Man's (and Woman's - Summer Weight). FSC 8405
A-A-1785 Trousers, Man's and Woman's (Winter Weight). FSC 8405
A-A-1786 Shirt, Man's (and Woman's; Short Sleeve). FSC 8415
MIL-C-15065J Coat Fronts. FSC 8315
MIL-H-15505K Hat, Service, Woman's. FSC 8410
MIL-C-15507L Cap, Garrison, Woman's (Navy). FSC 8410
MIL-C-15881C Coat, Woman's: Cotton, Sateen; Green; (Utility). FSC 8410
MIL-S-19665B Shirt, Woman's: Cotton, Sateen, Green (Utility). FSC 8410
MIL-H-19793C Havelock, Plastic. FSC 8410
MIL-S-202474A Slacks, Woman's: Cotton, Sateen, Green (Utility). FSC 8410
MIL-O-21086B (1) Overcoat, Woman's: Wool, Serge, Green. FSC 8410
MIL-H-24900A Hat, Combination, Woman's (Coast Guard). FSC 8410
MIL-R-24919A Raincoat, Woman's, w/Removable Liner(CG). FSC 8410
MIL-C-24921A Coat, All-Weather, Woman's, with Removable Liner. FSC 8410
MIL-S-24923 Shirt, Utility, Woman's, Polyester/Cotton (CG). FSC 8410
MIL-O-24926A Overcoat, Woman's, Enlisted. FSC 8410
MIL-S-24948A Slacks, Woman's (with Side Pockets). FSC 8410
MIL-J-24949 Jumper, Woman's, White. FSC 8410
MIL-C-28922 (2) Coat, Woman's: Summer, Green and White. FSC 8410

47
MIL-U-28946A Valid Notice 1 Uniform, Women's: White; Dress (Officer's). FSC 8410
MIL-S-29122D Skirt, Woman's, Blue, Dress. FSC 8410
MIL-C-29123A Coat, Woman's, Summer (Navy). FSC 8410
MIL-C-29124D Coat, Woman's, Blue, Dress. FSC 8410
MIL-S-29138A (1) Sweater, Woman's, Acrylic. FSC 8410
MIL-S-2936B Shirts, Women's: Long and Short Sleeves. FSC 8410
MIL-T-29375A Tunic: Woman's Maternity. FSC 8410
MIL-S-29376A Skirt: Woman's Maternity. FSC 8410
MIL-S-29377A Slacks: Woman's Maternity. FSC 8410
MIL-C-29381C Coat, All-Weather, Woman's. FSC 8410
MIL-H-29382 Hood, Woman's: All-Weather Coat, Dress. FSC 8410
MIL-V-29384 Valid Notice 1 Vest, Woman's: Scarlet, Dress (General Officer's). FSC 8410
MIL-C-29386A Cap, Dress: Woman's. FSC 8410
MIL-S-29388B (1) Shirts, Woman's: Maternity, Long and Short Sleeves. FSC 8410
MIL-C-29391A Coat, Woman's: Wool Gabardine: Dress Blue Ceremonial. FSC 8410
MIL-C-29393 Valid Notice 1 Coat, Woman's: Full Dress, Scarlet, U.S. Marine Band, Musician's. FSC 8410
MIL-S-29394B Skirts, Woman's: Evening Dress, U.S. Marine Band (Musician's). FSC 8410
MIL-S-29395A Slacks, Woman's: Musician's. FSC 8410
MIL-J-29396 Valid Notice 1 Jacket, Woman's: Special Full Dress Scarlet, U.S. Marine Band, Musician. FSC 8410
MIL-J-29397 Valid Notice 1 Jacket, Woman's, Full Dress Scarlet, U.S. Marine Band, Musician. FSC 8410
MIL-B-29408A Belt, All Weather Coat, Woman's. FSC 8410
MIL-C-29427A (1) Coats, Woman's. FSC 8410
MIL-S-29429A Skirts, Woman's. FSC 8410
MIL-C-29431 Caps, Garrison: Woman's. FSC 8410
MIL-S-29432A Slacks, Woman's. FSC 8410
MIL-C-29453A Coat, Woman's: Wool/Polyester; Gabardine, Blue. FSC 8410
MIL-C-29454 Caps, Service: Woman's, Polyester/Wool, Wool. FSC 8410
MIL-C-29628 Coat, Woman's, Blue, Dress. FSC 8410
MIL-S-29629 Skirt, Woman's (with Welt Pockets). FSC 8410
MIL-S-29630 Slacks, Woman's. FSC 8410
MIL-S-29631 Skirt, Woman's, Blue, Dress. FSC 8410
MIL-S-29633A Shirt, Woman's, Dress, Short and Long Sleeve (Coast Guard). FSC 8410
MIL-D-37031 Dresses, Woman's, Cotton-Polyester, Static Resistant, Pleated Front. FSC 8410
MIL-S-40035C (2) Shirt, Woman's (Exercise). FSC 8415
MIL-S-41825F Slacks, Woman's. FSC 8410
MIL-H-43162F Hat, Service, Woman's, Wool or Polyester and Wool. FSC 8410
MIL-S-43505D Shirt, Woman's, Polyester/Cotton. FSC 8410
MIL-C-43972D Coat, All-Weather, Woman's, Black with Removable Liner. FSC 8410
MIL-S-44090C Shirt, Woman's, Short Sleeve, Polyester/Cotton, Army Green 415, Durable Press. FSC 8410
MIL-S-44092B (1) Slacks, Woman's: Classic Design, Polyester/Wool. FSC 8410
MIL-S-44093B Shirt, Woman's, Long Sleeve, Polyester/Cotton, Army Green 415, Durable Press. FSC 8410
MIL-S-44102B Skirt, Woman's, Classic Design, Polyester/Wool. FSC 8410
MIL-C-44107C Cover, Ground Troops-Parachutists Helmet. FSC 8415
MIL-S-44110B Slacks, Maternity, Utility Work Uniform. FSC 8410
<table>
<thead>
<tr>
<th>Document Code</th>
<th>Description</th>
<th>FSC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-C-44111B</td>
<td>Coat, Maternity, Utility Work Uniform.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-44130C</td>
<td>Cap, Garrison, Women's, Polyester/Wool, AG-344.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-T-44293A</td>
<td>Tunic, Woman's, Hospital Duty Uniform (HDU).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-44379 (1)</td>
<td>Coats, Woman's, Classic Design, Polyester/Wool, AG-344.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-50011</td>
<td>Uniform, Woman's: Tunic and Slacks, White, Food Handlers.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-50072A</td>
<td>Hat, Service, Woman's, Drill Instructor.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-50365A</td>
<td>Sweater, Woman's, Acrylic.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-50368A</td>
<td>Coat, Woman's, All-Weather, with Removable Liner.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-50527</td>
<td>Trunks, General Purpose.</td>
<td>FSC 8415</td>
</tr>
<tr>
<td>A-A-55111A</td>
<td>Coat, All-Weather, Woman's, w/Removable Liner.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-55122</td>
<td>Hood, Rain, Woman's.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-55189</td>
<td>Skirt, Maternity.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-55210</td>
<td>Clack, Woman's, Undress.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-55212</td>
<td>Belt, All-Weather Coat, Woman's.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-55218</td>
<td>Shirt, Woman's, Dress, White (Short Sleeve).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-55221</td>
<td>Tunic, Maternity.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>A-A-55230</td>
<td>Slacks, Woman's Hospital Duty Uniform (HDU).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-82104 (1)</td>
<td>Cap, Garrison, Woman's; Cotton, Polyester, Dark Blue; (Utility).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-82114A</td>
<td>Coat Front: for Coats, Musicians.</td>
<td>FSC 8315</td>
</tr>
<tr>
<td>MIL-J-82122B</td>
<td>Jacket, Woman's: Evening Dress (Officer's).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-82125A</td>
<td>Cape, Woman's: Evening Dress (Officer's).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-82126B</td>
<td>Skirts, Woman's: Evening Dress.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-H-82142 (1)</td>
<td>Hood, Rain, Woman's: Nylon, Rubber Coated; Green.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-R-82190A</td>
<td>Raincoat, Woman's: Nylon, Rubber Coated; Green.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-H-83012C</td>
<td>Hat, Service, Woman's (Frame and Removable Cover).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-83234C</td>
<td>Skirts, Woman's, Blue.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-B-83268B</td>
<td>Beret, Woman's.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-H-83269A</td>
<td>Hood, Rain, Woman's.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-83422</td>
<td>Cap, Woman's, Hot Weather.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-83482B</td>
<td>Slacks, Woman's.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87005D</td>
<td>Skirt, Woman's, Dress (CG).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87006A</td>
<td>Shirt, Woman's, Dress, (Coast Guard).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87012D</td>
<td>Slacks, Woman's, Dress (CG).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87013D</td>
<td>Slacks, Woman's, Undress.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-87014B</td>
<td>Cap, Garrison, Woman's (Coast Guard).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87053C</td>
<td>Skirt, Woman's, Belted.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87054C</td>
<td>Slacks, Woman's, Belted.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87055B</td>
<td>Shirt, Woman's, Dress, White (Short Sleeve).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87056A</td>
<td>Shirt, Woman's Dress Blue (Long Sleeve).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-J-87056A</td>
<td>Jacket, Utility, Woman's.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87061C</td>
<td>Shirts, Utility, Women's Chambray.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87063B</td>
<td>Slacks, Utility, Women's, Denim.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87073</td>
<td>Shirt, Woman's, Working, Khaki (Long Sleeve).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-87076A</td>
<td>Cloth, Coated, Aramid, Aluminized.</td>
<td>FSC 8305</td>
</tr>
<tr>
<td>MIL-S-87091C</td>
<td>Shirt, Woman's, Open Notch Collar.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-87160A</td>
<td>Coat, Woman's, (Pant Suit).</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-C-87215</td>
<td>Cap, Garrison, Woman's, Sir Force.</td>
<td>FSC 8410</td>
</tr>
<tr>
<td>MIL-S-87225A</td>
<td>Shirts, Women's: Short and Long Sleeves, Polyester/Cotton (Durable Press) and Long Sleeves, Polyester/Wool.</td>
<td>FSC 8410</td>
</tr>
</tbody>
</table>
MIL-J-87251

Jacket, Woman's: Lightweight with Removable Liner. FSC 8410

Food Handler's/Processor's
A-A-91B
DOD-A-616G Valid Notice 1
BBB-F-695 (1)
A-A-719
MIL-P-1601E
MIL-S-1820G
MIL-D-3018D Reinst Notice 2
MIL-C-15096H
MIL-C-19479B
MIL-C-29136
MIL-L-44042
A-A-50380
A-A-55067

Apron, Food Handlers. FSC 8415
Aprons, Food Handlers'. FSC 8415
Frock, Man's (Butcher's, White). FSC 8415
Food Handler's Paper Caps. FSC 8415
Protectors, Arm, Gasoline Field Range Outfit. FSC 7360
Smock, Food Inspector's. FSC 8415
Dress, Food Handler's, Woman's. FSC 8415
Coat, Food Handler's (Steward). FSC 8415
Coat, Food Handler's: Cotton and Polyester Twill; White; with Pocket. FSC 8405
Cap, Food Handler's. FSC 8415
Liner, Food Inspector's Smock. FSC 8415
Coat, Food Handler's (Steward). FSC 8415
Smock, Food Inspector's. FSC 8415

Special Pockets Garments
MIL-V-44323A (1)
MIL-V-44362 (1)
A-A-55227
A-A-55240
MIL-V-81523A Valid Notice 2
MIL-V-83271B

Vest, Tactical Load Bearing. FSC 8415
Vest, Grenade, Carrier (for 40-mm Grenades). FSC 8415
Pocket, Ammunition Magazine, Enlisted Men's, M-1923. FSC 8465
Apron, Construction Worker's. FSC 8415
Vest, Survival Equipment, Type SV-2A. FSC 8415
Vest, Survival Mesh Set, SRU-21/P. FSC 8415

Surgical Gown/Glove/Mask
DOD-C-48E
A-A-30119A
A-A-30153
A-A-30156
A-A-30188
MIL-M-36168
MIL-G-36565A Valid Notice 1
MIL-S-36573B (2)
MIL-F-36972 Valid Notice 1
MIL-F-36978 (1)
MIL-T-37030 Valid Notice 1
MIL-S-37039 Valid Notice 1
MIL-T-37046 Valid Notice 1
MIL-T-37064 Valid Notice 1
MIL-T-37069 Valid Notice 1

Cap, Operating, Surgical, Green. FSC 6532
Hood, Operating, Surgical. FSC 6532
Mask, Surgical. FSC 6515
Cap, Operating, Surgical (Woman's). FSC 6532
Mask, Surgical (Sub-Micron). FSC 6515
Mask, Surgical, Nonwoven Fabric, Green, Disposable. FSC 6510
Gowns, Operating, Surgical, Cotton, Vest-Type, Green. FSC 6532
Smock, Dental Operating. FSC 6532
Gown, Operating, Surgical. FSC 6532
Footwear Covers, Disposable, Conductive Plastic Film. FSC 8430.
Trousers, Operating, Surgical Men's, Cotton-Polyester, Static Resistant. FSC 6532
Shirts, Operating, Surgical, Man's Cotton-Polyester Static Resistant. FSC 6532
Trousers, Operating, Surgical, Women's, Cotton-Polyester, Static Resistant. FSC 6532
Tunics, Operating, Surgical, Woman's Cotton-Polyester, Static Resistant, Long Sleeves. FSC 6532
Tunics, Operating, Surgical, Woman's Cotton-Polyester, Static Resistant, Short Sleeves. FSC 6532
MIL-S-37129 Valid Notice 1 Shirts, Operating, Surgical, Man's, Cotton, Sleeveless, Style A. FSC 6532
MIL-S-37130 Valid Notice 1 Shirts, Operating, Surgical, Man's, Cotton, Quarter Length Sleeves, Style B. FSC 6532
MIL-T-37131 Valid Notice 1 Trousers, Operating, Surgical, Man's Cotton, Green. FSC 6532
A-A-51070A Mask, Surgical. FSC 6515
A-A-51264B Surgical Pack, Gown and Towel. FSC 6532
A-A-51301A Footwear Covers, Operating Room (Disposable). FSC 6532
A-A-51343 Surgical Pack, Lower Extremity. FSC 6532
A-A-51361A Surgical Pack, Gown and Towel. FSC 6532
A-A-51373A Gown Operating, Surgical. FSC 6532
A-A-0053134 Gloves, Surgeons' (Powder-Free, Sterile, Disposable). FSC 6515
A-A-53443 Gown, Operating, Surgical. FSC 6532
A-A-54372A Mask, Surgical (Pleated). FSC 6532
A-A-54407 Gown, Operating, Surgical. FSC 6532
A-A-54433 Cap, Operating, Surgical. FSC 6532
A-A-54553 Mask, Surgical. FSC 6515
A-A-54791 Gloves, Surgeons', Latex Rubber, Pre-Powdered, Disposable, Sterile. FSC 6515
A-A-54870 Caps, Operating, Surgical (Woman's). FSC 6532

Nonsurgical Medical & Veterinary
MIL-S-2021E Reinst Notice 2 Suit, Convalescent (Jack and Trousers). FSC 6532
MIL-C-37186B Coats, Medical Attendant's, Man's, White, Cotton-Polyester, Durable Press. FSC 6532
MIL-S-37442 Smocks, Physician's, Man's, White, Cotton-Polyester, Durable Press. FSC 6532
MIL-S-0037951 Smock, Medical Assistant's, Man's, White, Cotton-Polyester, Durable Press. FSC 6532
MIL-D-43732F Dress, Woman's, Hospital Duty Uniform (HDU). FSC 8410
A-A-53562 Glove, Patient Examining and Treatment (Plastic, Large Size, Sterile). FSC 6515
A-A-54373 Robe, Dressing (Striped Seersucker). FSC 6532
A-A-54480 Mask, Face, Aseptic. FSC 6532
A-A-54916 Gown, Hospital Patient. FSC 6532

Underwear & Nightwear, Men's
A-A-153 Drawers, Men's. FSC 8420
MIL-D-2525D Drawers, Men's: Cotton, Ankle Length. FSC 8420
MIL-U-2526D Undershirts, Man's: Cotton, Full Length Sleeves. FSC 8420
MIL-D-40099H Drawers, Men's Boxer Style. FSC 8415
MIL-U-43262D Undershirts, Cold Weather, Men's. FSC 8415
MIL-S-43357E Shirt, Sleeping, Heat Retentive and Moisture Resistant, Nylon/Acetate, Tricot Knit. FSC 8415
MIL-D-43357E Drawers, Men's, Brief Type. FSC 8420
MIL-U-44096A (1) Undershirt, Man's (Quarter-Sleeve). FSC 8420
MIL-U-44164A Undershirt, Cold Weather, Polypropylene. FSC 8415
Government/Military Standards and Specifications

A-A-50003B  Drawers, Men's (Brief-Type).  FSC 8420
A-A-50013D  Undershirt, Man's (Quarter-Sleeve).  FSC 8420

Underwear & Nightwear, Women's
MS35839  Underwear and Nightwear, Women's FSC Class 8425.  FSC 8425.

Hosiery, Handwear & Clothing Accessories, Men's
MIL-S-48L  Socks, Men's, Cushion Sole, Stretch Type.  FSC 8440
A-A-114  Socks, Cotton.  FSC 8440
MIL-S-405H  Socks, Men's, Winter (Wool and Cotton).  FSC 8440
MIL-L-714G  Leggings, Men's.  FSC 8440
MIL-STD-1612B  Provisions for Evaluating Quality of Gloves, Cloth, Dress.  FSC 8440
MIL-STD-1613B  Provisions for Evaluating Quality of Gloves, Leather, Dress.  FSC 8440
A-A-1624  Necktie (Striped).  FSC 8440
A-A-1787  Necktie.  FSC 8440
MIL-G-3866G  Gloves, Cloth, Cotton, Knitted, Lightweight.  FSC 8415
MIL-S-5365F Valid Notice 1  Scarf, Neckwear, Sage Green, Flying, Tubular, N-18 (Scarf, Sage Green, Flying, Tubular, Type N-18).  FSC 8440
MIL-S-10926G  Suspenders, Trousers, M-1950.  FSC 8440
MIL-S-11922E Valid Notice 1  Scarf, Branch of Service, BIB Type.  FSC 8455
MIL-S-14210G  Socks, Men's, Nylon and Cotton, Knee Length, Stretch Type.  FSC 8440
MIL-M-16149G  Mitten, Welders.  FSC 8415
MIL-C-19677C  Clasp, Necktie: Metal; Gold Colored.  FSC 8455
MIL-C-19688B  Cummerbund, Man's: Black.  FSC 8440
MIL-G-21893C  Gloves, Cloth, Nylon, Knitted (Dress, Men's).  FSC 8440
MIL-P-22295C Valid Notice 1  Protector Trousers, Pistol Holster, FSC 8465
MIL-G-24909A  Gloves, Men's and Women's.  FSC 8440
A-A-30052B  Socks, Men's.  FSC 8440
MS35807  Hosiery, Handwear, and Clothing Accessories: Men's FSC Class 8440.  FSC 8440
MIL-N-41804E  Neckties, Men's, Four-in-Hand.  FSC 8440.
MIL-G-41817E  Gloves, Men's, Cloth, Dress, White.  FSC 8440
MIL-B-4351A Valid Notice 1  Belt, Man's, Waist, Blue 334 (Army Band Uniform).  FSC 8405
MIL-N-43741B  Handkerchief, Ham's, Cotton, Knitted.  FSC 8440
MIL-S-43823A Valid Notice 1  Socks, Men's, Nylon, Cushion Sole, Stretch Type, OG 106.  FSC 8440
MIL-G-44108A  Gloves, Combat Vehicle Crewman's, Summer.  FSC 8415
A-A-50015B  Socks, Ribbed Knit, Stretch Type.  FSC 8440
A-A-50016A  Gloves, Men's: Cloth, Leather Palm, Knitted Wristlet, Size Medium.  FSC 8415
A-A-50021A  Gloves, Men's Cloth, Leather Palm with Gauntlet.  FSC 8415
A-A-50356B  Handkerchief, Men's or Women's.  FSC 8440
A-A-50386  Gloves, Men's and Women's.  FSC 8440
A-A-52055  Gloves, Men's and Women's, Leather, Light Duty.  FSC 8415
A-A-52203  Suspenders, Trousers (Flying Suit).  FSC 8440
A-A-55079  Socks: Men's, Cushion Sole, Stretch Type.  FSC 8440

52
Government/Military Standards and Specifications

A-A-55083  Scarf, Neckwear, Sage Green, Flying, Tubular N-1B (Scarf, Sage Green, Flying Tubular, Type N-18). FSC 8440
A-A-55107  Socks: Men's, Nylon, Cushion Sole, Stretch Type. FSC 8440
A-A-55199  Necktie. FSC 8440
A-A-55203  Suspenders, Trousers (Flying Suit). FSC 8440
A-A-55226  Scarf, Neckwear, Wool. FSC 8440
A-A-55236  Gloves, Men's, Cloth, Dress, White. FSC 8440
A-A-55246A Necktie, Neck. FSC 8440
MIL-C-82167 Valid Notice 1  Gloves, Leather: Gauntlet; Drummer's. FSC 8440
MIL-N-87042C  Neckerchief (Acetate Black). FSC 8440

Hosiery, Handwear & Clothing Accessories, Women's

MIL-G-1007H  Gloves, Women's. FSC 8445
MIL-STD-1611A Valid Notice 1 Provisions for Evaluating Quality of Hoods and Havelocks, Women's. FSC 8410
A-A-1787  Necktie. FSC 8440
MIL-S-10679E Valid Notice 1 Scarf, Neckwear: Woman's. FSC 8445
MIL-S-17868B (1) Scarf, Neckwear: Wool, Woman's. FSC 8445
MIL-N-19857C Reinst Notice 2 Neckties: Woman's, Polyester/Wool. FSC 8445
MIL-G-24909A  Gloves, Men's and Women's. FSC 8440
MIL-N-29113B  Necktie Woman's (Bow, Black). FSC 8445
MIL-A-29131B  Anklets, Woman's, Acrylic and Nylon, Ribbed, Stretch Type. FSC 8445

MIL-N-29387A  Necktie, Woman's: General Officer. FSC 8445
MIL-S-43317C  Scarf, Neckwear, Woman's, Acrylic. FSC 8445
MIL-G-43958 Valid Notice 1 Gloves, Cloth, Black, Lined, Girl's Jr. R.O.T.C.. FSC 8445
MIL-H-43981D  Handbag, Woman's, Synthetic, Black (Use A-A-55113). FSC 8445

MIL-N-44106B  Necktab, Woman's Shirt. FSC 8445
A-A-50386  Gloves, Men's and Women's. FSC 8440
A-A-52055  Gloves, Men's and Women's, Leather, Light Duty. FSC 8415
A-A-55073  Necktie, Woman's (Coast Guard). FSC 8445
A-A-55113  Handbag, Woman's: Synthetic, Black. FSC 8445
A-A-55225  Scarf, Neckwear, Woman's Acrylic. FSC 8445
A-A-55226  Scarf, Neckwear, Wool. FSC 8440
MIL-C-82111A  Cover, Purse: Woman's (Officer's). FSC 8410
MIL-O-82112A  Ornamentation: for Uniform, Woman's, Evening Dress, Officer's. FSC 8455
MIL-C-82121B  Cummerbund, Woman's: Evening and Mess Dress (Officer's). FSC 8445.
MIL-G-83150A Valid Notice 1 Gloves, Cloth, Nylon Knitted (Women's, Dress). FSC 8445
MIL-N-87007B  Necktie, Woman's (CG). FSC 8445

Children's & Infant's Apparel & Accessories
A-A-54036  Undershirt, Infant's. FSC 6532

Luggage
KK-S-151C  Satchels, Physician's. FSC 6532
A-A-584B Valid Notice 1 Case, General Utility (Artificial Leather). FSC 8460
KK-B-650A INT AMD 2 Briefcase (Leather). FSC 8460
MIL-B-829M  Bag, Duffel. FSC 8465

53
### Government/Military Standards and Specifications

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-A-1519A</td>
<td>Case, Dispatch (Artificial Leather).</td>
<td>FSC 8460</td>
</tr>
<tr>
<td>MIL-B-2378H</td>
<td>Bag, Barracks. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>A-A-2523B</td>
<td>Case, Dispatch, Molded Plastic. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>A-A-2724</td>
<td>Portfolio, Plastic. FSC 7510</td>
<td></td>
</tr>
<tr>
<td>MIL-T-10798L</td>
<td>Trunk Locker, Barracks. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>MIL-T-16381B</td>
<td>Trunk, Locker, Barracks; and Tray. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>MS35860</td>
<td>Luggage FSC Class 8460. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>MIL-S-37180</td>
<td>Satchel, Physician's, Boston Style, Three Compartments. FSC 6532</td>
<td></td>
</tr>
<tr>
<td>MIL-K-41835D</td>
<td>Kit Bag, Flyer's. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>A-A-50083</td>
<td>Bag, Plastic, Folded Garment. FSC 8105</td>
<td></td>
</tr>
<tr>
<td>A-A-55062A</td>
<td>Suitcase, Flyers. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>A-A-55179</td>
<td>Bag, Money. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>A-A-55192</td>
<td>Case, Map. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>A-A-55205</td>
<td>Bag, Personal Effects. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-C-81808</td>
<td>Chest, Collapsible. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>MIL-K-83782A</td>
<td>Kit Bag, Flyer's. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>MIL-S-83791A</td>
<td>Suitcase, Flyer's Clothing. B-4B. FSC 8460</td>
<td></td>
</tr>
<tr>
<td>MIL-B-87018A</td>
<td>Bag, Money. FSC 8460</td>
<td></td>
</tr>
</tbody>
</table>

### Individual Equipment

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-F-411D</td>
<td>Fasteners, Belt; Clips, End Strap with Hook; and Keepers, Slide.</td>
<td>FSC 8465</td>
</tr>
<tr>
<td>MIL-B-833G</td>
<td>Belt, Trousers, Cotton Webbing, with Clip. FSC 8440</td>
<td></td>
</tr>
<tr>
<td>MIL-C-1002J</td>
<td>Case, Field, First Aid Dressing, Leather (Military Police). FSC 8485</td>
<td></td>
</tr>
<tr>
<td>A-A-1040A</td>
<td>Key Chain, Reel (Door Key and Drill Chuck Keys). FSC 5340</td>
<td></td>
</tr>
<tr>
<td>MIL-B-1107G</td>
<td>Belt, Individual Equipment, M-1936. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>NAF 1197 REV 2</td>
<td>Tube Pilot's Relief. FSC 1680</td>
<td></td>
</tr>
<tr>
<td>MIL-B-1462F</td>
<td>Belt, General Officer's. FSC 8440</td>
<td></td>
</tr>
<tr>
<td>MIL-P-1474J</td>
<td>Pitons, Mountain. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-C-1476G</td>
<td>Creepers, Ice. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-S-1478F</td>
<td>Snap Link, Mountain Piton. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-B-1718H</td>
<td>Belt, Military Police, 1-3/4 Inch Wide, Man's. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-S-1812C</td>
<td>Shelf, Cargo Support, Packboard, Pressed Steel. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-P-1814E</td>
<td>Pad, Shoulder, Packboard. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-C-1933G</td>
<td>Carrier, Policeman's Club; and Grommet. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-B-2883D</td>
<td>Boatswain's Pipe. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-C-3880E</td>
<td>Club, Policeman's. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>AN8018 Rev A</td>
<td>Horn, Flyer's Relief Tube. FSC 4730</td>
<td></td>
</tr>
<tr>
<td>AN8019 Rev 1</td>
<td>Tee and Flyer's Relief Tube. FSC 4730</td>
<td></td>
</tr>
<tr>
<td>MIL-S-10055D</td>
<td>Strap, Packboard: Quick Release. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-P-10941D</td>
<td>Packboard, Plywood. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-H-13102D</td>
<td>Holder, Cartridge, Belt, Cal. .38, Leather, Black, 6-Round. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-B-17693e</td>
<td>Belts, Coats, Man's: Polyester/Wool. FSC 8405</td>
<td></td>
</tr>
<tr>
<td>MIL-C-17774A</td>
<td>Cover, Bayonet; Seaband; Cotton Duck, White (with Leather Tip). FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-C-17841B</td>
<td>Carrier, Club, Policeman's: Cotton Webbing; White. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-P-17863C</td>
<td>Pocket, Ammunition Magazine: Military Police. FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-C-17864C</td>
<td>Carrier, Pistol Holster: Cotton Duck, White (MP). FSC 8465</td>
<td></td>
</tr>
<tr>
<td>MIL-B-18184B</td>
<td>Belt, Coat, Man's, Webbing, Cotton, White. FSC 8440</td>
<td></td>
</tr>
<tr>
<td>MIL-S-19206D</td>
<td>Sword and Scabbard (Noncommissioned Officers). FSC 8465</td>
<td></td>
</tr>
</tbody>
</table>
MIL-C-19734C Carrier: Sword Scabbard. FSC 8465
MIL-C-20006F Clothes Stop. FSC 8465
MIL-C-20267C Valid Notice 1 Carrier, Club, Policeman’s: Cotton Webbing, Olive Drab (with Double Hook). FSC 8465
MIL-K-20277H Knife, Combat; and Sheath. FSC 1095
MIL-S-21042C Sling, Flagstaff: Leather, White; with Brass Socket. FSC 8345
MIL-B-21154C Belts, Military Police: Cotton Webbing; White. FSC 8465
MIL-H-21155D Hardware: for Belt, Military Police. FSC 8465
MIL-B-21880D Belt, Military Police (White). FSC 8465
MS22025 Valid Notice 1 Bracket, Flyers Relief Tube, Vertical. FSC 1680
MIL-S-28921A Sword and Scabbard: (Officer’s) with Case. FSC 8465
MIL-S-28933B Sling, Sword, Shoulder: Nylon Webbing, White. FSC 8465
MIL-B-29378 (1) Belt, Man’s: Ceremonial, Officers. FSC 8440
MIL-C-36828A Valid Notice 1 Case, Spectacle, Envelope Type, Soft Fabric Lining. FSC 6540
MIL-S-40022E Shoulder Strap, Side Arm, Military Police, Leather, Black. FSC 8465
MIL-S-40046D Valid Notice 1 Sling, Flagstaff. FSC 8345
MIL-C-4012E (2) Canteen, Water, Insulated, Corrosion-Resisting Steel, without Cup and Cover. FSC 8465
MIL-C-40126F Cup, Water Canteen (for Insulated Canteen). FSC 8465
MIL-40131C Cover, Water Canteen, Insulated, Cotton Duck. FSC 8465
MIL-F-40165C Reinst Notice 2 Field Pack, Canvas, Combat, M-1961. FSC 8465
MIL-S-43013C Valid Notice 1 Sling, Universal, Individual Load Carrying. FSC 8465
MIL-C-43103D Canteen, Water, Plastic, with Screw Cap. FSC 8465
MIL-S-43279D Slings, Bag and Carrying: Communications Equipment. FSC 8465
MIL-P-43304C Pack and Harness Assembly, Parachutist’s Weapons and Individual Equipment. FSC 8465
MIL-S-43306B Sling, Bag and Case Carrying, ST-33. FSC 8465
MIL-P-43312C Pocket, Ammunition Magazine. FSC 8465
MIL-R-43323E Rifle Butt Pocket and Strap Assembly. FSC 8465
MIL-S-43489D Sling, Bag and Case Carrying; ST-35. FSC 8465
MIL-C-43603B (1) Canteen, Water, Collapsible, 2-Quart Capacity. FSC 8465
MIL-F-43673 Valid Notice 1 Frame, Rucksack, Steel. FSC 8465
MIL-C-43689C Cover, Water Canteen, 2-Quart, Collapsible (with Pile Lining). FSC 8465
MIL-L-43720C (1) Liner, Field Pack. FSC 8465
MIL-C-43742B Cover, Water Canteen, LC-2. FSC 8465
MIL-P-43756 Packboard, Metal. FSC 8465
MIL-M-43757A Modification Kit, Packboard, Radio Carrying. FSC 8465
MIL-C-43761C Cup, Water Canteen, w/Wire Handle, Corrosion-Resisting Steel. FSC 8465
MIL-R-43826C Belt, Individual Equipment. FSC 8465
MIL-S-43828A INT AMD 2 Strap, Webbing, Cargo Tie Down, Lightweight Pack Frame, M-1972. FSC 8465
MIL-S-43829B INT AMD 1 Suspenders, Individual Equipment Belt, LC-1. FSC 8465
MIL-C-43830B INT AMD 1 Cover, Field Pack, Camouflage, LC-1. FSC 8465
MIL-C-43831B INT AMD 1 Carrier, Intrenching Tool, Hand, Folding, Lightweight, Plastic, LC-1. FSC 8465
MIL-F-43832C (1) Field Pack, Combat, Nylon, Large, LC-1. FSC 8465
MIL-F-43833D Field Pack, Combat, Nylon, Medium, LC-2. FSC 8465
MIL-F-43834E Frame, Field Pack, (Riveted), and Shelf, Cargo Support (Lightweight), LC-1. FSC 8465
MIL-S-43835E Straps, Pack Frame and Field Pack, Ground Troops. FSC 8465
MIL-F-43997A  Field Pack, Training. FSC 8465
MIL-C-44083A  Carrier, AN/PRC-68 or AN/PRC-68A, Radio Set. FSC 8465
MIL-W-44126A  Water, Drinking, Emergency, Flexibly Packaged. FSC 8960
MIL-P-44153A  Pocket, Ammunition Magazine, 9 mm. FSC 8465
MIL-C-44216A  Canteen, Water, Collapsible, 5-Quart Capacity. FSC 8465
MIL-C-44217A  Cap, Water Canteen, 5-Quart, Collapsible. FSC 8465
MIL-C-44218  Carrier and Canteen/Collapsible, 5-Quart Capacity. FSC 8465
MIL-C-44219  Carrier, Canteen, Collapsible, 5-Quart Capacity. FSC 8465
MIL-S-44220A  Sleeping Bag, Cold Weather Aircraft Survival Kit (Vacuum Packed). FSC 8465
MIL-S-44221A  Stand, Canteen Cup. FSC 8465
MIL-A-44264  Adapter Kit, M-1 Cap; for Canteen, Water, Insulated. FSC 8465
MIL-B-44306B  Bag, Stuff, Sleeping System. FSC 8465
MIL-C-44307B  Cover, Bivy, Extreme and Intermediate Cold Weather Sleeping Systems. FSC 8465
MIL-H-44308A  Hood and Socks, Extreme Cold Weather Sleeping System (ECWSS). FSC 8465
MIL-S-44309B  Sleeping Bags, for Sleeping systems. FSC 8465
MIL-F-44324A  Field Pack, Large, with Internal Frame: and Pack, Patrol, Combat. FSC 8465
MIL-C-44347  Carrier, Water Canteen, Cold Weather, CRS. FSC 8465
MIL-C-44348  Canteen, Water, Cold Weather, CRS. FSC 8465
MIL-C-44349  Cup, Water Canteen, Cold Weather, CRS. FSC 8465
MIL-S-44377  Snowshoe, Trail, Magnesium, Snow and Ice Traversing Equipment (SITE). FSC 8465
MIL-H-48671  Holster, Hip, M12. FSC 1005
A-A-50098A  Stopper, Hexagon, Irregular. FSC 8465
A-A-50106A  Stopper, Wired, Wedged. FSC 8465
A-A-50112A  Piton, Mountain, Angle. FSC 8465
A-A-50116A  Axe, Ice. FSC 5110
A-A-50117A  Crampons, Hinged. FSC 8465
A-A-50118A  Straps, Crampon. FSC 8465
A-A-50119A  Anchor, Snow, Wired. FSC 8465
A-A-50121A  Protector, Crampon. FSC 8465
A-A-50125B  Descender, Figure-8. FSC 8465
A-A-50127A  Ascenders, Cam Action. FSC 8465
A-A-50374  Bag, Fireman's, Utility. FSC 8460
A-A-50748 Valid Notice 1 Holster, Hip, Pistol, Semi-Automatic 9 mm. FSC 1095
MIL-C-51278D (1) Cap, Water Canteen, Field, 1 Quart and 2 Quart Canteens. FSC 8465
A-A-52113  Handcuffs and Leg Irons. FSC 8465
A-A-55058  Club, Policeman's. FSC 8465
A-A-55059  Carrier, Policeman's Club, with Grommet. FSC 8465
A-A-55064  Lanyard, Individual Equipment Carrying. FSC 8465
A-A-55077  Bag, Duffel. FSC 8465
A-A-55084  Pocket, Ammunition Magazine. FSC 8465
A-A-55092  Bag, Clothing, Waterproof. FSC 8465
A-A-55105  Bag, Barracks. FSC 8465
A-A-55106  Whistle, Ball, Plastic. FSC 8465
A-A-55114  Bag, Laundry. FSC 8465
A-A-55120  Lanyard, Individual Equipment Carrying. FSC 8465
A-A-55124  Creepers, Ice. FSC 846
A-A-55176 Bag, Laundry, Nylon. FSC 8465
A-A-55177 Suspenders, Individual Equipment Belt, LC-2. FSC 8465
A-A-55182 Cover, Personnel Identification Tag. FSC 8465
A-A-55191 Shoulder Strap, Side Arm, Military Police, Leather, Black. FSC 8465
A-A-55193 Holder, Cartridge, Belt, Cal .38, Leather, Black, 6-Round. FSC 8465
A-A-55194 Protector, Trousers, Pistol Holster. FSC 8465
A-A-55197 Belt, Man's, Waist, Blue 334 (Army Band Uniform). FSC 8405
A-A-55207 Belt, All-Weather, Coat, Men's. FSC 8405
A-A-55231 Case, Handcuffs, Leather, Black. FSC 8465
A-A-55245 Necklace, Personnel, Identification Tag. FSC 8465
MIL-B-63992A Valid Notice 1 Bandoleer, 200 Round Magazine (M249 Machine Gun). FSC 1305
MIL-C-82141A Cover, Music Carrying Pouch: Embroidered. FSC 7720
MIL-B-83475 Valid Notice 1 Belt, Security Police, 2-1/4-Inch-Wide. FSC 8465
MIL-B-83665B Bag, Pilot Relief (Male). FSC 8105
C.6 ISO Standards\textsuperscript{46}

The ISO standards have been organized as follows:

**PROCESSES OF THE TEXTILE INDUSTRY**

**TEXTILE FIBRES**
- Reference
- Physical Properties
- Methods

**NATURAL FIBRES**
- Reference
- Wool
- Cotton
- Flax

**SYNTHETIC FIBRES**

**TEXTILES IN GENERAL**
- Reference
- Colorfastness
- Physical Properties

**YARNS**
- Reference
- Physical Properties

**TEXTILE FABRICS**
- Reference
- Physical Properties
- Thermal Properties
- Appearance

**ROPES**
- Reference
- Physical Properties
- Specifications

**TEXTILE FLOOR COVERINGS**
- Reference
- Physical Properties
- Other Properties

**TEXTILE MACHINERY**
- Spinning Machines, Reference
- Spinning Machines, Specifications
- Winding Machines and Equipment, Reference
- Winding Machines and Equipment, Specifications
- Weaving Machines, Reference
- Weaving Machines, Specifications
- Knitting Machines
- Dyeing and Finishing Equipment

**LEATHER**

**CLOTHING**
- Sizing
- Protective Clothes

STEP

ISO Standards

PROCESSES OF THE TEXTILE INDUSTRY

ISO 4921:1993

TEXTILE FIBERS

Reference
ISO 8159:1987

Physical Properties
ISO 1973:1976
ISO 6741-1 to 4:1989
  Part 1: Mass Determination and Calculations.
  Part 2: Methods for Obtaining Laboratory Samples.
  Part 3: Specimen Cleaning Procedures.
  Part 4: Values Used for the Commercial Allowances and the Commercial Moisture Regains.
ISO 6989:1981

Methods
ISO 1130:1975
ISO 1833:1977
Textile—Binary Fibre Mixtures—Quantitative Chemical Analysis. TC 38.
  Amendment 1:1980 to ISO 1833:1977
ISO 5088:1976
ISO 5090:1977

NATURAL FIBERS

Reference
ISO 6938:1984
Textiles—Natural Fibres—Generic Names and Definitions. TC 38.

Wool
ISO 137:1975
ISO 920:1976
Wool—Determination of Fibre Length (Barbe and Hauter) Using a Comb Sorter. TC 38/SC 6.
ISO 1136:1976
ISO 2646:1974
ISO 2647:1973
Wool—Determination of Percentage of Medullated Fibres by the Projection Microscope. TC 38/SC 6.

59
ISO Standards


Cotton


Flax


SYNTHETIC FIBRES


TEXTILES IN GENERAL

Reference

ISO Standards

ISO/TR 7248:1985 Fire Data—Collection and Presentation System

Colorfastness
Part 1: Low Thermal Resistance.
Part A01: General Principles of Testing.
Part A02: Grey Scale for Assessing Change in Color.
Part A03: Grey Scale for Assessing Staining.
Part A04: Method for the Instrumental Assessment of the Degree of Staining of Adjacent Fibers.
Part B01: Colour Fastness to Light: Daylight.
Part B02: Colour Fastness to Artificial Light: Xenon Arc Fading.
Part B03: Colour Fastness to Weathering: Outdoor Exposure.
Part B04: Colour Fastness to Weathering: Xenon Arc.
Part B05: Detection and Assessment of Photochromism.
Part B06: Colour Fastness to Artificial Light at High Temperatures: Xenon Arc Fading Lamp Test.
Part C01: Colour Fastness to Washing: Test 1.
Part C02: Colour Fastness to Washing: Test 2.
Part C03: Colour Fastness to Washing: Test 3.
Part C04: Colour Fastness to Washing: Test 4.
Part C05: Colour Fastness to Washing: Test 5.
Part C06: Colour Fastness to Domestic and Commercial Laundering.
Part D01: Colour Fastness to Dry Cleaning.
Part E01: Colour Fastness to Water.
Part E02: Colour Fastness to Sea Water.
Part E03: Colour Fastness to Chlorinated Water (Swimming-Bath Water).
Part E04: Colour Fastness to Perspiration.
Part E05: Colour Fastness to Spotting: Acid.
Part E06: Colour Fastness to Spotting: Alkali.
Part E07: Colour Fastness to Spotting: Water.
Part E08: Colour Fastness to Water: Hot Water.
Part E09: Colour Fastness to Potting.
Part E11: Colour Fastness to Steaming.
ISO Standards

ISO 105 (con't)

Part E13: Colour Fastness to Acid-Felting: Severe.
Part E14: Colour Fastness to Acid-Felting: Mild.
Part F: Standard Adjacent Fabrics.
Part G: Colour Fastness to Atmospheric Contaminants.
Part G01: Colour Fastness to Nitrogen Oxides.
Part G02: Colour Fastness to Burnt-Gas Fumes.
Part G03: Colour Fastness to Ozone in the Atmosphere.
Part G04: Colour Fastness to Oxides of Nitrogen in the Atmosphere for High Humidities.
Part J02: Method for the Instrumental Assessment of Whiteness.
Part N: Colour Fastness to Bleaching Agencies.
Part N01: Colour Fastness to Bleaching : Hypochlorite.
Part N02: Colour Fastness to Bleaching : Peroxide.
Part N03: Colour Fastness to Bleaching : Sodium Chlorite (Mild).
Part N04: Colour Fastness to Bleaching : Sodium Chlorite (Severe).
Part N05: Colour Fastness to Stoving.
Part P: Colour Fastness to Heat Treatments.
Part P01: Colour Fastness to Dry Heat (Excluding Pressing).
Part P02: Colour Fastness to Pleating : Steam Pleating.
Part S: Colour Fastness to Vulcanizing.
Part S01: Colour Fastness to Vulcanization : Hot Air.
Part S02: Colour Fastness to Vulcanization : Sulfur Monochloride.
Part S03: Colour Fastness to Vulcanization : Open Steam.
Part X01: Colour Fastness to Carbonizing : Aluminum Chloride.
Part X02: Colour Fastness to Carbonizing : Sulfuric Acid.
Part X04: Colour Fastness to Mercerizing.
Part X05: Colour Fastness to Organic Solvents.
Part X06: Colour Fastness to Soda Boiling.
Part X07: Colour Fastness to Cross-Dyeing : Wool.
Part X08: Colour Fastness to Degumming.
Part X09: Colour Fastness to Formaldehyde.
Part X10: Assessment of Migration of Textile Colours into Polyvinyl Chloride Coating.
Part X11: Colour Fastness to Hot Pressing.
Part X12: Colour Fastness to Rubbing.
Part X14: Colour Fastness to Acid Chlorination of Wool: Sodium Dichloroisocyanurate.
Part Z: Colourant Characteristics.
Part Z01: Colour Fastness to Metals in the Dye-Bath : Chromium Salts.
Part Z02: Colour Fastness to Metals in the Dye-Bath : Iron and Copper.

Physical Properties
ISO 2960:1974

Textiles—Determination of Bursting Strength and Bursting Distension—Diaphragm Method. TC 38.
Textiles—Determination of pH of the Aqueous Extract. TC 38.
### ISO Standards


### YARNS

**Reference**


**Physical Properties**


Part 2: Methods for Obtaining Laboratory Samples.  
Part 3: Specimen Cleaning Procedures.  
Part 4: Values Used for the Commercial Allowances and the Commercial Moisture Regains.

### TEXTILE FABRICS

**Reference**

ISO Standards

ISO 3759:1984

ISO 7211-1 to 6:1984
Part 2: Determination of Number of Threads per Unit Length.
Part 3: Determination of Crimp of Yarn in Fabric.
Part 4: Determination of Twist in Yarn Removed from Fabric.

ISO 8498:1990

ISO 8499:1990

ISO 9092:1988

ISO 9354:1989
Textiles—Weaves—Coding System and Examples. TC 38/SC 20.

ISO 11224:1993
Textiles—Nonwovens—Web Formation and Bonding—Vocabulary. TC 38.

Physical Properties
ISO 675:1979

ISO 811:1981
Textile Fabrics—Determination of Resistance to Water Penetration—Hydrostatic Pressure Test. TC 38/SC 2.

ISO 2649:1974

ISO 3005:1978
ISO 3801:1977
Textiles—Woven Fabrics—Determination of Mass per Unit Length and Mass per Unit Area. TC 38.

ISO 3932:1976

ISO 3933:1976

ISO 4920:1981
Textiles—Determination of Resistance to Surface Wetting (Spray Test) of Fabrics. TC 38/SC 2.

ISO 5081:1977
Textiles—Woven Fabrics—Determination of Breaking Strength and Elongation (Strip Method). TC 38.

ISO 5082:1982

ISO 5084:1977
Textiles—Determination of Thickness of Woven and Knitted Fabrics (Other than Textile Floor Coverings). TC 38.

ISO 7771:1985
Textiles—Determination of Dimensional Changes of Fabrics Induced by Cold-Water Immersion. TC 38/SC 2.

ISO 9073-1 to 5:1989
Part 1: Determination of Mass per Unit Area.
Part 2: Determination of Thickness.
Part 3: Determination of Tensile Strength and Elongation.
Part 4: Determination of Tear Resistance.

ISO 9290:1990
Textiles—Woven Fabrics—Determination of Tear Resistance by the Falling Pendulum Method. TC 38.
ISO Standards


Thermal Properties

Appearance

ROPES

Reference

Physical Properties

Specifications
## ISO Standards

### TEXTILE FLOOR COVERINGS

#### Reference

- **ISO 1957:1986**

- **ISO 2424:1992**

- **ISO 5086:1977**
  Textile Floor Coverings—Hand-Knotted Carpets—Sampling and Selection of Areas of Test. TC 38/SC 12.

- **ISO/TR 6131:1986**
  Textile Floor Coverings—Tetrapod Walker Apparatus—Constructional Details and Instructions for Use. TC 38/SC 12.

- **ISO 6347:1989**
  Textile Floor Coverings—Consumer Information. TC 38/SC 12.

#### Physical Properties

- **ISO 1763:1986**
  Carpets—Determination of Number of Tufts and/or Loops per Unit Length and per Unit Area. TC 38/SC 12.

- **ISO 1765:1986**

- **ISO 1766:1986**
  Textile Floor Coverings—Determination of Thickness of Pile above the Substrate. TC 38/SC 12.

- **ISO 2094:1986**

- **ISO 2549:1972**
  Textile Floor Coverings—Hand-Knotted Carpets—Determination of Tuft Length Above the Woven Ground.

- **ISO 2551:1981**
  Machine-Made Textile Floor Coverings—Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions. TC 38/SC 12.

- **ISO 3018:1974**
  Textile Floor Coverings—Rectangular Textile Floor Coverings—Determination of Dimensions. TC 38/SC 12.

- **ISO 3415:1986**
  Textile Floor Coverings—Determination of Thickness Loss After Brief, Moderate Static Loading. TC 38/SC 12.

- **ISO 3416:1986**
  Textile Floor Coverings—Determination of Thickness Loss After Prolonged, Heavy Static Loading. TC 38/SC 12.

- **ISO/TR 4918:1990**
  Textile Floor Coverings—Determination of Wear—Castor Chair Test. TC 38/SC 12.

- **ISO 4919:1978**

- **ISO 8543:1986**

- **ISO 10833:1992**
  Textile Floor Coverings—Determination of Mechanical Damage at a Cut Edge—Modified Vetterman Drum Tester Method. TC 38/SC 12.

- **ISO 10834:1992**
  Textile Floor Coverings—Non-Destructive Measurement of Pile Thickness Above the Backing—WRONZ Gauge Method. TC 38/SC 12.

- **ISO 2550:1972**
  Textile Floor Coverings—Hand-Made Carpets—Determination of Types of Knots. TC 38/SC 12.

#### Other Properties

- **ISO/TR 6356:1982**
  Textile Floor Coverings—Assessment of Static Electrical Propensity—"Walking" Test. TC 38/SC 12.

- **ISO 6925:1982**
  Textile Floor Coverings—Burning Behavior—Tablet Test at Ambient Temperature. TC 38/SC 19.
ISO Standards


TEXTILE MACHINERY


Spinning Machines, Reference


Spinning Machines, Specifications

  Part 1: Main Dimensions.
  Part 2: Spring Bottoms.
  Part 1: T-Rings and Their Appropriate Travellers.
  Part 2: HZCH-, HZ- and J-Rings and Their Appropriate Travellers.
ISO Standards

ISO 342:1983  Textile Machinery and Accessories—Worsted and Woolen
Cards—Width of Cylinder and Width on the Wire. TC 72/SC 1.
ISO 3464:1977  Textile Machinery and Accessories—Bearings for Bottom Rollers
and Allied Dimensions—Caps with Central Nose and Caps Side
Lugs. TC 72/SC 1.
Clothing. TC 72/SC 1.
ISO 5233:1978  Textile Machinery and Accessories—Bottom Fluted Rollers for
Drafting Systems. TC 72/SC 1.
ISO 5235:1977  Textile Machinery and Accessories—Ring-Spinning Frames and
Speedframes—Top and Bottom Aprons. TC 72/SC 1.
ISO 6170:1983  Spinning Machinery—Condenser Rubbers for Cards. TC 72/SC
1.
ISO 6171:1982  Textile Machinery and Accessories—Bead Wires and
Corresponding Grooves for Cards—Main Types and Dimensions.
TC 72/SC 1.
ISO 9903:1991  Textile Machinery and Accessories—Wires for Metallic Card
Clothing. TC 72/SC 1.
ISO 9904:1989  Textile Machinery and Accessories—Steel Pins for Spinning
Preparatory and Spinning Machinery. TC 72/SC 1.

Winding Machines and Equipment, Reference
ISO 141:1976  Textile Machinery and Accessories—Pirn Winders and Cross
Winders—Definition of left and right sides. TC 72/SC 2.
ISO 476:1982  Textile Machinery and Accessories—Pirn Winding Machines—
ISO 477:1982  Textile Machinery and Accessories—Cones and Cheese Winding
ISO 1037:1982  Textile Machinery and Accessories—Beams for Dyeing Slivers
and Yarn—Terminology and Main Dimensions. TC 72/SC 4.
ISO 5238-1 to 2:1983  Textiles Machinery and Accessories—Packages of yarns and
ISO 5240:1978  Textile Machinery and Accessories—Warp Creels—Terminology
and Main Dimensions. TC 72/SC 2.
ISO 8116-1 to 9:1985-91  Textile Machinery and Accessories—Beams for Winding (7
parts). TC 72/SC 2.
Part 4: Quality Classification of Flanges for Weaver's Beams,
Warper's Beams and Sectional Beams.
Part 5: Sectional Beams for Warp Knitting—Terminology and
Main Dimensions.
Part 6: Beams for Ribbon Weaving and Ribbon Knitting—
Terminology and Main Dimensions.
Part 9: Dyeing Beams for Textile Fabrics.
ISO Standards

**Winding Machines and Equipment, Specifications**

ISO 111:1978  
**Textile Machinery and Accessories—Cones for Yarn Winding (Cross Wound)—Half Angle of the Cone 4 degrees 20'.** TC 72/SC 2.

ISO 112:1983  
**Textile Machinery and Accessories—Cones for Yarn Winding (Cross Wound)—Half Angle of the Cone 3 degrees 30'.** TC 72/SC 2.

ISO 324:1978  
**Textile Machinery and Accessories—Cones for Cross Winding for Dyeing Purposes—Half Angle of the Cone 4 degrees 20'.** TC 72/SC 2.

ISO 344:1981  
**Textile Machinery and Accessories—Spinning Machines—Flyer Bobbins.** TC 72.

ISO 368:1991  
**Spinning Preparatory, Spinning and Doubling (Twisting) Machinery—Tubes for Ring-Spinning, Doubling and Twisting Spindles, Taper 1:38 and 1:64.** TC 72/SC 1.

ISO 574:1979  
**Textile Machinery and Accessories—Perforated Cylindrical Tubes for Cheese Dyeing.** TC 72.

ISO 575:1978  
**Textile Machinery and Accessories—Transfer Cones—Half Angle of the Cone 4 degrees 20'.** TC 72/SC 2.

ISO 1472:1977  

ISO 1946:1976  

ISO 2013:1983  

ISO 3914-1 to 4:1981-89  
**Textile Machinery and Accessories—Cylindrical Tubes (4 parts).** TC 72/SC 1.
  Part 1: Recommended Values of Inner Diameters and Lengths.
  Part 2: Tubes for Open-End Spinning Machines.
  Part 3: Tubes for Tape Yarns.
  Part 4: Tubes for Textured Yarns.

ISO 5237:1978  
**Textile Machinery and Accessories—Cones for Yarn Winding (Cross Wound)—Half Angle of the Cone 5 degrees 57'.** TC 72/SC 2.

ISO 6169:1982  
**Textile Machinery and Accessories—Flanged Bobbins for Doubling and Twisting.** TC 72/SC 1.

ISO 6175:1983  
**Textile Machinery and Accessories—Recommended Profile Threads for Weaver's Beams.** TC 72/SC 2.

ISO 8489-1:1985  

ISO 10458:1993  

**Weaving Machines, Reference**

ISO 108:1976  
**Textile Machinery and Accessories—Weaving Looms—Definition of Left and Right Sides.** TC 72/SC 3.

ISO 142:1976  
**Textile Machinery—Working Widths of Weaving Machines.** TC 72/SC 2.

ISO 1586:1977  
ISO Standards


Weaving Machines, Specifications
ISO Standards

ISO 5245:1977  Textile Machinery and Accessories—Weft Pims with Rings (27mm and 30mm) for Automatic Winding at the Loom. TC 72/SC 3.
ISO 5246:1977  Textile Machinery and Accessories—Ringless Weft Pims (24mm and 27mm) for Automatic Winding at the Loom. TC 72/SC 3.

Knitting Machines
  Part 1: Latch-Type Needles.
  Part 2: Bearded Needles.
  Part 3: Compound Needles.
  Part 2: Warp Let-off, Fabric Take-up and Batching.
ISO Standards

Dyeing and Finishing Equipment

LEATHER

ISO 2417:1972  Leather—Determination of Absorption of Water. IULTCS.
ISO 2418:1972  Leather—Laboratory Samples—Location and Identification. IULTCS.
ISO 2419:1972  Leather—Condition of Test Pieces for Physical Tests. IULTCS.
ISO 2420:1972  Leather—Determination of Apparent Density. IULTCS.
ISO 2588:1985  Leather—Sampling—Number of Items for a Gross Sample. IULTCS.
ISO 3376:1976  Leather—Determination of Tensile Strength and Elongation. IULTCS.
ISO 3377:1975  Leather—Determination of Tearing Load. IULTCS.
ISO 3378:1975  Leather—Determination of Resistance to Grain Cracking, and of Crack Index. IULTCS.
ISO 3379:1976  Leather—Determination of Distension and Strength of Grain—Ball Burst Test. IULTCS.
ISO 3380:1975  Leather—Determination of Shrinkage Temperature. IULTCS.
ISO 4044:1977  Leather—Preparation of Chemical Test Sample. IULTCS.
ISO 4047:1977  Leather—Determination of Sulphated Total Ash and Sulphated Water-Insoluble Ash. IULTCS.
## ISO Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 4048:1977</td>
<td>Leather—Determination of Matter Soluble in Dichloromethane. IULTCS.</td>
</tr>
<tr>
<td>ISO 5397:1984</td>
<td>Leather—Determination of Nitrogen Content and &quot;Hide Substance&quot;—Titrimetric Method. IULTCS.</td>
</tr>
<tr>
<td>ISO 5399:1984</td>
<td>Leather—Determination of Water-Soluble Magnesium Salts—EDTA Titrimetric Method. IULTCS.</td>
</tr>
<tr>
<td>ISO 5400:1984</td>
<td>Leather—Determination of Total Silicon Content—Reduced Molybdosilicate Spectrometric Method. IULTCS.</td>
</tr>
<tr>
<td>ISO 11643:1993</td>
<td>Leather—Tests for Colour Fastness—Colour Fastness of Small Samples to Dry-Cleaning Solutions. IULTCS.</td>
</tr>
<tr>
<td>ISO 11646:1993</td>
<td>Leather—Measurement of Area. IULTCS.</td>
</tr>
</tbody>
</table>

## CLOTHING

### Sizing

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
</table>

### Protective Clothing

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
</table>
ISO Standards


  Part 1: PVC-Coated Fabrics.
  Part 3: Natural Rubber- and Synthetic Rubber-Coated Fabrics.


STEP47

ISO 10303-1 to 203:1994-95
  Part 41: Fundamentals of Product Description and Support.
  Part 42: Geometry and Topology Representations.
  Part 43: Representation Specialization.
  Part 44: Product Structure Configuration.
  Part 101: Draughting.
  Part 201: Explicit Draughting.
  Part 203: Configuration-Controlled Design.

47 This listing includes only the STEP initial release. There are many other parts in some stage of the development and approval process.
C.7 NFPA Apparel Standards

The following are performance specifications for clothing to protect against hazardous environments. Most of them relate to fire fighting. The standards are listed in numerical order.

NFPA 1971  Protective Clothing for Structural Fire Fighting
NFPA 1972  Helmets for Structural Fire Fighting
NFPA 1973  Gloves for Structural Fire Fighting
NFPA 1974  Protective Footwear for Structural Fire Fighting
NFPA 1975  Station/Work Uniforms for Fire Fighters
NFPA 1976  Protective Clothing for Proximity Fire Fighting
NFPA 1977  Protective Clothing and Equipment for Wildland Fire Fighting
NFPA 1983  Fire Service Life Safety Rope, Harness, and Hardware
NFPA 1991  Vapor-Protective Suits for Hazardous Chemical Emergencies
NFPA 1992  Liquid Splash-Protective Suits for Hazardous Chemical Emergencies
NFPA 1993  Support Function Protective Clothing for Hazardous Chemicals Operations

---

C.8 SAE AMS Textile Specifications49

These specifications for the most part relate to high performance aramid and para-aramid textile materials. They are listed in numerical order.

3901B # Organic Fiber (Para-Aramid), Yarn and Roving, High Modulus (Oct 92)
3901/1B # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/23.5 Tensile Strength, 18 (125)/982 Tensile Modulus, 195 Denier, 0.6% Finish (Oct 92)
3901/2B # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/24.5 Tensile Strength, 17.5 (121)/934 Tensile Modulus, 380 Denier, 0.6% Finish (Oct 92)
3901/3B # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/25.5 Tensile Strength, 16.5 (114)/900 Tensile Modulus, 1140 Denier, 0.6% Finish (Oct 92)
3901/4B # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/24.3 Tensile Strength, 18 (125)/982 Tensile Modulus, 1420 Denier, 0.6% Finish (Oct 92)
3901/5B # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 450 (3103)/23.0 Tensile Strength, 17.5 (121)/780 Tensile Modulus, 7100 Denier, 0.6% Finish (Oct 92)
3901/6B # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 500 (3447)/23.5 Tensile Strength, 7.5 (121)/800 Tensile Modulus, 4560 Denier, 0.6% Finish (Oct 92)
3901/7A # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/21.5 Tensile Strength, 16.5 (114)/825 Tensile Modulus, 2160 Denier, 0.6% Finish (Oct 92)
3901/8A # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/21.5 Tensile Strength, 18 (124)/982 Tensile Modulus, 195 Denier, 1.2% Finish (Oct 92)
3901/9A # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/24.5 Tensile Strength, 17.5 (121)/934 Tensile Modulus, 380 Denier, 1.2% Finish (Oct 92)
3901/10A # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/23.6 Tensile Strength, 16.5 (114)/885 Tensile Modulus, 1140 Denier, 1.2% Finish (Oct 92)
3901/11A # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/22.2 Tensile Strength, 16.5 (114)/870 Tensile Modulus, 1420 Denier, 1.2% Finish (Oct 92)
3901/12A # Yarn, Organic Fiber (Para-Aramid), High Modulus, OY 390 (2689)/21.5 Tensile Strength, 16.5 (114)/870 Tensile Modulus, 1420 Denier, 1.2% Finish (Oct 92)
3902B # Cloth, Organic Fiber (Para-Aramid), High Modulus, for Structural Composites (Oct 89)

# A previous issue of this document has DODISS acceptance. DODISS adoption means that the document has been coordinated by the tri-services and is approved for military use.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3903A+</td>
<td>Cloth, Organic Fiber (Para-Aramid), High Modulus, Epoxy Resin Impregnated (Oct 85)</td>
</tr>
<tr>
<td>3903/1A+</td>
<td>Cloth, Organic Fiber, High Modulus, Epoxy Resin Impregnated, OC Style 120, 175 (350) (Jan 88)</td>
</tr>
<tr>
<td>3903/2A+</td>
<td>Cloth, Organic Fiber, High Modulus, Epoxy Resin Impregnated, OC Style 181, 175 (350) (Jan 88)</td>
</tr>
<tr>
<td>3903/3A+</td>
<td>Cloth, Organic Fiber, High Modulus, Epoxy Resin Impregnated, OC Style 281, 175 (350) (Jan 88)</td>
</tr>
<tr>
<td>3903/4A+</td>
<td>Cloth, Organic Fiber, High Modulus, Epoxy Resin Impregnated, OC Style 328, 175 (350) (Jan 88)</td>
</tr>
<tr>
<td>3903/5A+</td>
<td>Cloth, Organic Fiber, High Modulus, Epoxy Resin Impregnated, OC Style 120, 80 (180) (Jan 88)</td>
</tr>
<tr>
<td>3903/6A+</td>
<td>Cloth, Organic Fiber, High Modulus, Epoxy Resin Impregnated, OC Style 181, 80 (180) (Jan 88)</td>
</tr>
<tr>
<td>3903/7A+</td>
<td>Cloth, Organic Fiber, High Modulus, Epoxy Resin Impregnated, OC Style 281, 80 (180) (Jan 88)</td>
</tr>
<tr>
<td>3903/8A+</td>
<td>Cloth, Organic Fiber, High Modulus, Epoxy Resin Impregnated, OC Style 328, 80 (180) (Jan 88)</td>
</tr>
<tr>
<td>3904A</td>
<td>Fiber, Organic (Para-Aramid), Yarn and Roving, Intermediate Modulus, for Cables, Cordage, and Woven Goods (Apr 89)</td>
</tr>
<tr>
<td>3904/1A</td>
<td>Yarn, Organic Fiber (Para-Aramid), Intermediate Modulus, 200 Denier, 1.75% Finish (Apr 89)</td>
</tr>
<tr>
<td>3904/2A</td>
<td>Yarn, Organic Fiber (Para-Aramid), Intermediate Modulus, 400 Denier, 1.75% Finish (Apr 89)</td>
</tr>
<tr>
<td>3904/3A</td>
<td>Yarn, Organic Fiber (Para-Aramid), Intermediate Modulus, 1000 Denier, 1.75% Finish (Apr 89)</td>
</tr>
<tr>
<td>3904/4A</td>
<td>Yarn, Organic Fiber (Para-Aramid), Intermediate Modulus, 1000 Denier, 1.5% Finish, for Weaving (Apr 89)</td>
</tr>
<tr>
<td>3904/5A</td>
<td>Yarn, Organic Fiber (Para-Aramid), Intermediate Modulus, 1500 Denier, 1% Finish, for Cable and Cordage (Apr 89)</td>
</tr>
<tr>
<td>3904/6</td>
<td>Yarn, Organic Fiber (Para-Aramid), Intermediate Modulus, 1500 Denier, 7.0% Finish, for Cable and Cordage (Apr 89)</td>
</tr>
<tr>
<td>3904/7</td>
<td>Yarn, Organic Fiber (Para-Aramid), Intermediate Modulus, 1500 Denier, Zero Finish, for Cable and Cordage (Apr 89)</td>
</tr>
<tr>
<td>3904/8</td>
<td>Yarn, Organic Fiber (Para-Aramid), Intermediate Modulus, 1500 Denier, 1.0% Finish, for Weaving (Apr 89)</td>
</tr>
<tr>
<td>3904/9</td>
<td>Yarn, Organic Fiber (Para-Aramid), Intermediate Modulus, 3000 Denier, 0.9% Finish, for Non-Apparel Ballistic Applications (Apr 89)</td>
</tr>
<tr>
<td>3904/10</td>
<td>Roving, Organic Fiber (Para-Aramid), Intermediate Modulus, 15,000 Denier, 7.0% Finish, for Cable and Cordage (Apr 89)</td>
</tr>
<tr>
<td>3904/11</td>
<td>Roving, Organic Fiber (Para-Aramid), Intermediate Modulus, 15,000 Denier, 1.0% Finish, for Cable and Cordage (Apr 89)</td>
</tr>
<tr>
<td>3904/12</td>
<td>Roving, Organic Fiber (Para-Aramid), Intermediate Modulus, 9000 Denier, 7.0% Finish, for Cable and Cordage</td>
</tr>
<tr>
<td>3907</td>
<td>Cloth, Aramid, Plain and Basket Weave (Oct 85)</td>
</tr>
<tr>
<td>3907/1</td>
<td>Cloth, Aramid, 5 oz per sq. yd (170g/m²), Basket Weave (Oct 85)</td>
</tr>
</tbody>
</table>

* DODISS adoption means that the document has been coordinated by the tri-services and is approved for military use.
<table>
<thead>
<tr>
<th>Specimen</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3907/2</td>
<td>Cloth, Aramid, 4.3 oz per sq. yd (145g/m²), Plain Weave (Oct 85)</td>
</tr>
<tr>
<td>3908A</td>
<td>Cloth, Aramid (Para), Plain Weave, Thermally Stable (Jan 92)</td>
</tr>
<tr>
<td>3909</td>
<td>Cloth, Parachute, Aramid, Intermediate Modulus (Jul 85)</td>
</tr>
<tr>
<td>3909/1</td>
<td>Cloth, Parachute, Aramid, 3.0 oz per sq. yd (100 g/m²), 350 lb per in. (61,300 N/m) (Jul 85)</td>
</tr>
<tr>
<td>3909/2</td>
<td>Cloth, Parachute, Aramid, 2.25 oz per sq. yd (75 g/m²), 250 lb per in. (43,800 N/m) (Jul 85)</td>
</tr>
<tr>
<td>3909/3</td>
<td>Cloth, Parachute, Aramid, 2.0 oz per sq. yd (68 g/m²), 230 lb per in. (40,275 N/m) and 220 lb per in. (38,525 N/m) (Jul 85)</td>
</tr>
</tbody>
</table>
D GLOSSARY

This glossary contains terms common to the fiber, textile, and apparel sectors of the FTA industry, and some terms appearing in the titles of standards listed in Appendix C: FTA Standards Listing. They are listed alphabetically.

alpaca/alpaca
1. Animal belonging to the species of Llama; it produces a short textile fiber of 4 inches in one year's growth.
2. A thin cloth made of the woolly hair of the alpaca often with dyed silk, cotton, or another fiber in the weft.

anthropometry
The study and technique of human body measurement.

barre
1. A crossover striped cloth with stripes formed by weft from selvage; either woven or printed.
2. A defect due to variation in the number of picks per inch.

bast/bass
Strong woody fibers obtained from the stem, leaves, or fruit of various trees and plants, and known as bast or hard fibers. They are used especially in the manufacture of ropes, cordage, matting, etc.

beam
A cylinder of wood or metal on which the warp from the warping machine is wound before weaving; it is called the yarn beam or weaver's beam, backbeam or section beam.

chambray
1. A plain woven cotton or linen fabric with colored warp and white filling that gives a mottled colored surface; used for shirts, children's clothes, and dresses.
2. A similar but heavier carded yarn fabric used for work-shirts and children's play clothes.

chelation
The chemical process of forming a ring compound by joining a chelating agent to a metal ion.

CID
Commercial Item Description: The new format for specification of military items, including clothing. It will replace the traditional "MIL-specs." The CID gives the manufacturer more freedom in determining processes and in some cases materials to meet performance criteria.

CIM
Computer Integrated Manufacturing: The process of monitoring and controlling manufacturing processes on the shop floor electronically. This requires that machines of different types made by various manufacturers communicate with one another.

colorfastness/fastness
Retentive quality of firmness of dyes; such as fastness to light, perspiration, salt water, washing, etc. Fast colors are durable or lasting. (Note that the term, "colorfastness," is referred to in that

---

50 The entries in this glossary were obtained from the following references (some entries have been modified):
Link, 1954.
form and also in the form, "colour fastness," in the standards listings.

1. An instrument for measuring the depth of color in a liquid by comparison with a standards liquid of the same tint.
2. An instrument or device for determining and specifying colors by reference either to other colors or to certain complex stimuli.

A soft white fibrous substance covering the seeds of various malvaceous plants. Careful selection has greatly improved the quality and increased the length of the fiber known as staple-length. On account of its cheapness, cotton is the most important of textile products. The most important property of cotton is the spiral-like appearance or convolution of its fiber which gives it a natural twist, causing the fibers to adhere together while the yarn is being formed. The cotton staple falls into one or more categories in each group:

<table>
<thead>
<tr>
<th>Quality</th>
<th>Color</th>
<th>Feel, Handle</th>
<th>Defects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Even</td>
<td>Fair</td>
<td>Soft</td>
<td>Sandy</td>
</tr>
<tr>
<td>Irregular</td>
<td>Good</td>
<td>Firm</td>
<td>Dusty</td>
</tr>
<tr>
<td>Good</td>
<td>Spotted</td>
<td>Hard</td>
<td>Leafy</td>
</tr>
<tr>
<td>Very Good</td>
<td>Stained</td>
<td>Rough</td>
<td>Husky/Howly</td>
</tr>
<tr>
<td>Strong</td>
<td>Tinged</td>
<td>Towy</td>
<td>Neppy</td>
</tr>
<tr>
<td>Weak</td>
<td>Highly Colored</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silky</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long Stapled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short Stapled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damaged</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coarse</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the United States, the cotton receives one of the following overall grades (with "1" being of the highest quality):

1) Middling Fair
2) Strict Good Middling
3) Good Middling
4) Strict Middling
5) Middling
6) Strict Low Middling
7) Low Middling
8) Strict Good Ordinary
9) Good Ordinary

The tendency of excess dye to rub off.

A laboratory device for measuring the fastness of dyes to rubbing.

A process by which the natural gum of silk is dissolved and the released fibers are freed to be drawn.
desizing

The process of eliminating sizing (stiffening materials) from grey goods preparatory to bleaching, dyeing etc. The sizing substance is first made soluble by an acid or enzyme, then washed out.

drawing

1. The process of pulling out or elongating the sliver of the carding machine.
2. Various processes, including giling, reducing, and roving, by which slivers are converted into rovings of the required thickness for spinning.

fiber

Any tough substance composed of threadlike tissues and capable of being spun and woven; the minimum length for fibers to be spun into yarn is one-fifth of an inch. Vegetable fibers are yielded by the bast of plants, excepting cotton, which is the hairy tuft of the seed. The following table gives a list of fibers by origin:

<table>
<thead>
<tr>
<th>Animal</th>
<th>Vegetable</th>
<th>Mineral</th>
<th>Synthetic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wool</td>
<td>Cotton</td>
<td>Asbestos</td>
<td>Rayon</td>
</tr>
<tr>
<td>Hair</td>
<td>Hemp</td>
<td>Metals</td>
<td>Nylon</td>
</tr>
<tr>
<td>Silk</td>
<td>Flax</td>
<td></td>
<td>Vinyon</td>
</tr>
<tr>
<td>Sinew</td>
<td>Jute</td>
<td></td>
<td>Aralac</td>
</tr>
<tr>
<td></td>
<td>Ramio</td>
<td></td>
<td>Glass</td>
</tr>
<tr>
<td></td>
<td>Phormium</td>
<td></td>
<td>Paper</td>
</tr>
</tbody>
</table>

filament

1. A thread or threadlike object, an appendage or a separate fiber; the extreme length of filaments permits their being used in a yarn without twist or with very low twist, and they are usually made into yarn without the spinning operation required for fibers.
2. The single individual unit which is extracted by the silkworm or by the spinneret.
3. Continuous filaments are synthetic and regenerated fibers which have a short staple.
4. Monofilament is a simple filament of sufficient size to function as a yarn in normal textile operation.
5. Multifilament is a rayon yarn with a very large number of fine filaments.

findings

Small, miscellaneous materials used in the apparel manufacture process; not of textile origin; these would include buttons and zippers.

flax

A plant cultivated for its fibers; the long silky bast fiber freed from the stem by retting and various mechanical processes is used in the manufacture of a thread which is woven into a cloth generally known as linen.

gabardine

A twilled fabric in which warp threads predominate; used as material of clothing for both sexes.
hand/handle (fabric)  The reaction to the sense of touch, when raw material or goods are grasped in the hand to judge their quality, taking into account especially their fineness and softness.

havelock  A cloth covering for a cap, with a flap to cover and protect the back of the neck.

heald/heddle  1. One of the sets of parallel double cords or wires on the loom, which with their mounting compose the harness used to guide the warp.  2. To draw the warp threads with a heddle hook through the heald-eyes or comb, which is a loop formed in each heald.

hemp  A plant cultivated for its touch bast fibers, which is obtained similarly to flax; it is used for making cloth and cordage.

huck/huckabauk  A cotton cloth with a rough surface obtained by short floats of warp and weft threads on a plain weave ground texture; employed for towels.

integration  The process of bringing all parts of a system or process together and making them compatible.

kemp  Thick opaque and wavy fibers with a pointed tip and root, which are shed periodically into the fleece; they develop in nearly all breeds of sheep but principally in mountainous and carpet wool types. They greatly reduce the value of the wool because of the inferior spinning properties; they do not show up dyes.

knitting  1. The process of making a fabric by interlacing one or more yarns in a series of connected loops by means of needles, either by hand or by machines; there are rectilinear and circular knitting machines employed to make jerseys, stocking, and the like.  2. Gauge: a standard measure of the fineness of a knitted fabric obtained by counting the number of needles in a given unit of space.

medullated (wool)  This differs from true kemp because it is not shed but grows with the wool; it is distinguished by the coarser diameter of the medullated cells.

mercerization  A process to which cotton yarn is subjected to produce luster and shrinkage; the material is treated in a caustic soda solution for one minute and in tension, then neutralized and washed off.

modulus  A constant or coefficient that expresses the degree to which a substance possesses some property.

nep  1. Lumps or rolled up and tangled wool fibers which curl up in carding and sometimes also in combing by inefficient setting of the cylinders or rollers; they should be cleared out of the sliver in combing.  2. A cluster of fibers in the wool staple.
3. Little knots formed in cotton by immature fibers in the wool staple.

nonwovens

Materials, such as felts, which undergo neither the weaving nor the knitting process. Such fibers may be forced together and the cohesion produced by that process is enough for the intended applications.

pack

1. A bundle or a bale of raw material or of goods; to bale, to load.
2. A measure of scouring wool or wool top weighing 240 lbs.

pirn (weft)

1. A single-headed bobbin or spool in which head and barrel are shaped conically.
2. Yarn wound on the weaver's shuttle.

roving/roving-frame

1. Final product of the drawing process obtained on the roving frames called also dandles, resulting in a strand of wool of the desired thickness for spinning it into a worsted yarn.
2. Drawing process before spinning in worsted yarn manufacture.

saponification

1. Chemical process of soap-making.
2. The decomposition of any ester into the corresponding alcohol and fatty acid; also, the similar production of an acid from some other derivative.
3. Saponification number: milligrams of potassium hydride needed to saponify 1.0000 milligrams of the oil, fat, etc., that is being tested.

sisal

Approximately 300 species of plants which grow in desert and subtropical regions and supply very strong, smooth, yellowish bast fibers; they are used for upholstery and as substitutes of flax and hemp in the manufacture of sackcloths and carpets.

size/sizing

1. Stiffening or finishing threads, yarn, or fabrics by the use of sizes and glutinous materials; it can be done by means of a sizing apparatus attached to the loom (as in the slasher-sizer) or as a finishing process. There are three types of sizing as follows:

<table>
<thead>
<tr>
<th>Light Sizing</th>
<th>Medium Sizing</th>
<th>Heavy Sizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 10% of size. Gives a better handle to the cloth.</td>
<td>From 10% to 40% of size. Makes the cloth heavier for jeans and other clothing.</td>
<td>Up to 100% of size. Used for cheap cotton shirting. Also starching.</td>
</tr>
</tbody>
</table>

2. Determination of the count of rovings or yarns.
3. The process of mapping sets of dimensions for a garment to one numerical value. For instance, a size 7 dress denotes particular circumferential and linear measurements. Accurate anthropometric data is crucial to effective sizing.
slashing

A process in which sizing is applied to warp threads in their full width; it is used to size the warp yarn with a starch or like substance that will lay all the fibers parallel, and add strength to the yarn; this enables to go through weaving without damage.

sliver

A continuous strand of cotton, wool, or other fiber, in a loose untwisted state, produced by a carding, drawing or combing machine.

spinning

1. Final drawing of a carded or combed sliver or roving into a yarn inserting the required degree of twists, and winding it upon a cone; this is usually done by ring spinning, the air-jet system, or the open-end centrifugal process.
2. Wool spinning is done by either the woolen or worsted method.
3. Cotton Spinning joins and twists together a series of short fibers to make a thread of desired fineness and length; it consists of the following operations: opening and cleaning the bales, carding or loosening and parallellizing the fibers, drawing the slivers to a uniform length, spinning the slivers into yarn, and winding the yarn from the cones onto spools.
4. Dry spinning is the method for flax, hemp, jute, etc., as well as rayon.

stoving

1. The submitting of dampened wool, yarn or cloth to an agent, such as sulfur dioxide fumes, for bleaching.
2. Treating of the silk cocoon by heating to kill the chrysalis.

sundries

Miscellaneous articles used in sewing garments; not of textile origin; these would includes buttons, zippers, etc.

tannin

1. Tannic acid.
2. A chemical substance capable of promoting tanning.

tanning

The art or process of making leather from rawhides.

textile

Material capable of being spun or woven, knitted, felted, bonded, or crocheted.

vulcanization

A process that increases the strength, resiliency, and freedom from stickiness of a material by combining it with sulfur or other additives in the presence of heat and pressure.

warp/warping

1. A series of threads which are extended lengthwise in the loom and crossed by the weft; it is usually longer and harder twisted than the weft.
2. Warping is the arranging of the chain or series of warp threads according to quality and color, winding them off the bobbins and on to a special beam attached to the loom.

weaving

1. The process of interlacing a series of longitudinal yarns with another yarn running crosswise and known as the weft or filling, on machines called looms.
weaving (con’t)  2. A particular pattern or design of weaving such as plain, twill, satin, herringbone, hopsack, etc.
3. Cross weaving is a style of weaving which produces open work effects such as seen in gauze and lenos; it is produced by crossing one warp thread with another, first to one side and then to the other in some definite order.

weft
The thread which is thrown through the warp at right angles by means of a shuttle; it is, as a rule, softer spun and weaker than warp yarn.
## LIST OF ACRONYMS

The following is a list of key acronyms used in this paper. Many of them refer to organizations. A brief description and contact information for these organizations can be found in Appendix B: FTA Standards Organizations.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAMA</td>
<td>American Apparel Manufacturers Association</td>
</tr>
<tr>
<td>AATCC</td>
<td>American Association of Textile Chemists and Colorists</td>
</tr>
<tr>
<td>ALCA</td>
<td>American Leather Chemists Association</td>
</tr>
<tr>
<td>AMTEX</td>
<td>American Textile Partnership</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>APDES</td>
<td>Apparel Product Data Exchange Standard</td>
</tr>
<tr>
<td>ARC</td>
<td>(AAMA) Apparel Research Committee</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials</td>
</tr>
<tr>
<td>ATMI</td>
<td>Apparel Textile Manufacturers Association</td>
</tr>
<tr>
<td>CIM</td>
<td>Computer-Integrated Manufacturing</td>
</tr>
<tr>
<td>DAMA</td>
<td>(AMTEX) Demand-Activated Manufacturing Architecture</td>
</tr>
<tr>
<td>EC</td>
<td>European Community</td>
</tr>
<tr>
<td>EDI</td>
<td>Electronic Data Interchange</td>
</tr>
<tr>
<td>EDIFACT</td>
<td>Electronic Data Interchange for Administration, Commerce, and Transport</td>
</tr>
<tr>
<td>FASLINC</td>
<td>Fabric and Supplier Linkage Council</td>
</tr>
<tr>
<td>FTA</td>
<td>Fiber/Textile/Apparel (Industry)</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>ITC</td>
<td>Integrated Textile Complex</td>
</tr>
<tr>
<td>NBS</td>
<td>National Bureau of Standards (name changed to NIST in 1988)</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>NIST</td>
<td>National Institute of Standards and Technology</td>
</tr>
<tr>
<td>SAE</td>
<td>Society of Automotive Engineers</td>
</tr>
<tr>
<td>SAFLINC</td>
<td>Sundries and Finding Linkage Council</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>SRD</td>
<td>Standard Reference Data</td>
</tr>
<tr>
<td>SRM</td>
<td>Standard Reference Material</td>
</tr>
<tr>
<td>STEP</td>
<td>Standard for the Exchange of Product Model Data</td>
</tr>
<tr>
<td>TALC</td>
<td>Textile Apparel Linkage Council</td>
</tr>
<tr>
<td>TDI</td>
<td>Trade Data Interchange</td>
</tr>
<tr>
<td>UCS</td>
<td>Uniform Communication Standards</td>
</tr>
<tr>
<td>VICS</td>
<td>Voluntary Interindustry Communication Standard</td>
</tr>
<tr>
<td>WINS</td>
<td>Warehouse Information Network Standard</td>
</tr>
</tbody>
</table>