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# **Exhibit A**

# Consumer Attitude and Purchase Decision towards Textiles and Apparel Products

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**Abstract:** This paper aims to make a comprehensive review of factors affecting purchaser decision towards apparel and textile products. Research studies concerned with factors having impact on marketing of textile products including apparel and fashion products were reviewed. These factors include different cultural, social, personal, psychological and environmental aspects. Features related to market; namely product characteristics, purchase channel, price and promotion were reported.

**Keywords:** Cultural, Fashion, Market, Meaning, Mass customization, Physical, Purchase channel, Price, Promotion, Personal, Psychological, Social, Visual.

## 1. INTRODUCTION

Textile market is one of the most important markets in the world. Understanding factors influencing consumer behaviour is one of the techniques used in contemporary marketing of textile products. This technique could be employed to create a textile company strategy attracting and advertising for target consumer.

Consumer orientation marketing is a contemporary marketing technique based on consumer needs and wants. This technique aims at producing items and goods that people willing to buy. In other words, consumer demand is the focus of this marketing technique. One of the approaches applied in this technique is called consumer-driven approach. In which consumer needs are the driving force of all marketing decisions. Consumer needs include the nature, specification and characteristics of the product itself. Manufacturers and sellers of textile products might lose consumers as they are not aware of their needs and not ultimately understanding their wants and preferences. The continued viability of textile industry is based on the ability of manufacturers, advertisers, and retailers to predict, develop, and communicate styles of apparel and other textile products that conform with the desires of the consuming public.

Researchers have been long studying consumer behaviour and response for textile products. It was found important for researchers to carry out a comprehensive review for these research studies in order to identify and determine the key factors affecting consumer

behaviour and especially factors affecting purchase decision. This study will focus on target customers' evaluative criteria for various textile and garment items. This would be useful for researchers in the textile and apparel area in order to focus their forthcoming studies and investigations on the factors might affect purchasers' decision and not studied yet. Practically, this will be an informative research for textile, apparel and fashion designers, manufacturers and advertisers in order to put into consideration features could affect their product characteristics. In this research two main areas will be discussed, namely; market and consumer dominated variables.

## 2. MARKET DOMINATED VARIABLES

In this section variables related to product, place (or purchase channel), promotional merchandise (including branding and advertisement) and price are pointed out. Consumer purchase decision towards fashion apparel products is discussed. One of marketing and manufacturing techniques namely "Mass customization" allowing personalization of apparel products at low cost is reviewed.

### 2.1. Product

Product specifications have a great impact on marketing textile design products. This includes visual and physical characteristics; meaning carried by textile products and country of origin.

#### 2.1.1. Visual Properties

In textile and apparel design studies, the term "Preference" has been used to express consumer response for textile product design and appearance. Generally,

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textile product attributes have been investigated by researchers in terms of subjects' preference rather than consumer behaviour and purchase decision. Few research studies were found concerned with the relationship between consumer preference and behaviour and purchase decision.

Research studies indicated that colour has a great impact on product marketing. Colour was found influencing consumer behaviour in different fields of design products. This has been studied by researchers in terms of psychophysical reaction between colour and purchaser behaviour. Singh, S. in 2006 reviewed the literature relating to colour psychology in the context of marketing. He suggested that managers can use colours as an effective marketing tool to impact costumers' appetite, mood, and perception of waiting time, among others [1].

Kılınç, N. in 2011 found that clothing colour preference of boys and girls attending public or private schools in Konya, Turkey aged between six and nine is dependent on their age and sex but not on clothing type. The most preferred colours by girls were magenta, red-violet, red, and red-orange; however the boys preferred black, blue, cyan, and yellow. Warm colours (i.e. magenta, yellow, and red) were preferred by young children and colour preferences moved towards colder and neutral colours as children became older [2]. Islam *et al.* in 2014 ranked factors affecting buying decision for Bangladeshi fashion brands. Product quality (i.e. design, style, raw materials) was ranked the first factor followed by price [3].

## **2.1.2. Physical Attributes**

### **2.1.2.1. Textile Physical and Mechanical Properties**

Physical and mechanical properties of fabric used in making a textile product affecting apparel and clothing product appearance, fit, comfort and performance. Fabric care is highly affected by fabric physical and mechanical properties, which contribute to consumer purchase decision. Yan *et al.* in 2008 compared the effect of apparel care labels' information presentation format (i.e. text only, symbols only and combination) on consumers' confidence in making better decisions in terms of purchase and care of apparel. Participants employed were undergraduate students attending South-eastern University, USA. Text only and combination formats were more preferred than symbols only. These were found increasing consumers' confidence in taking purchase decision and post-purchase care. However, the first was the most preferred format. This

is because the participants had limited knowledge of care labels' symbols. So, it was found important to promote the understanding of these symbols [4].

### **2.1.2.2. Clothing Fit**

Clothing fit has been long considered as the most important element to costumers in clothing appearance [5]. Early-adolescents of age 13 are persons at the beginning of adolescence and it is an age group that overlaps with the so-called "Tween" consumer market in the USA. Klerk and Tselepis in 2007 suggested that early-adolescent female consumers do not have the expertise, knowledge and cognitive skills enabling them to realistically evaluate fit of clothes during purchase decision. Subjects employed were all 13-year old Caucasian early-adolescents, living in an urban environment, which was considered a very viable market with regard to the purchasing of clothes. They suggested that early-adolescent female consumers' fit expectations, evaluation and satisfaction are affected not only by functionality (i.e. contribute to comfortability or sensory beauty) but also about emotional pleasure and cognitive meanings. As they like to feel good about themselves and fit in with peer group and the norms set by fashion. Emotional needs are the most important quality dimension impacting consumers' satisfaction during wearing. These findings would contribute to companies' better understanding young female consumers with regard to fit recognition and reference [6].

Apparel industry needs to be able to go beyond just body measurements to incorporate fit preferences based on categorical profiles of consumer groups. Pisut and Connell in 2007 investigated fit preferences of female consumers in the USA. It was found that fit preference is dependent on garment style. Moreover, there was a vital need for better understanding of the impact of body shape and cathexis on personal fit preference in order to fit target consumers and improve product sell-through. So, manufacturers should be up to date with target consumer fit preference [7].

### **2.1.2.3. Clothing Comfort**

Comfort has been identified by major fibre marketers as one of the key attributes for consumer's desirability on apparel products in all markets [5]. Hes, L. in 2008 developed an alternative method for evaluation of fabrics and garments comfort properties. The new instrument used can be used in shops to enable the testing of basic comfort characteristics in front of the costumer. This could be used in advanced marketing based on quantitative garment characteristics [8].

### 2.1.3. Symbolic Meaning

Textile products are not only recognized by their visual and physical properties but also by their symbolic and affective connotations they represent. Littrell, M. in 1990 indicated the importance of understanding the meaning held by textile crafts for tourists. She developed profiles of international tourists based on the meaning associated with special textile crafts. The most common meanings were: that textile crafts owned enable the tourist to feel unique; the acquiring process presents a different activity from the daily ones done at home, and an experience providing a sample of local life different from that at home. In this study, frequent international travellers, regularly purchasing textile crafts when traveling, and speaking English as their first language were used. So, it was concluded that some tourists seek unusual and authentic shopping experience and others did not need to do culturally authentic shopping they are rather pleased by having unusual trip [9].

In 1997, Park, M. studied the relationship between usage behaviour (use frequency, use variety and use satisfaction) and fashion product type (fashionability and classification). Data were obtained from a survey of college students attending a major university in South Korea. This relationship would be a function of complex interactions of an individual's personal and social characteristics, lifestyle, and product interest, past experience, product-specific variables and situational variables. For fashion products, symbolic meaning was highly important [10]. Solomon and Englis in 1998 indicated in their study in USA that the meaning carried by expressive products including clothing would make them desired or avoided by consumers [11].

### 2.1.4. Country of Origin

Country of origin COO is the country of manufacture and production. The effect of COO on consumer perception and behaviour has been long studied because it is part of overall product image.

Country of origin and brand were found insignificant factors affecting female Chinese college students buying pyjamas by Rahman *et al.* in 2008 [48]. In 2010, Ogunnaiké, O. was concerned with the closure of many textile companies in Nigeria due to customer inclination for buying foreign products rather than local ones. It was implied that consumers perceive foreign-made textile fabrics as being better than locally made fabrics. This was influenced by some perceptual variables (i.e. colour, quality and availability of the textile fabrics) in their buying behaviour. Perception towards locally

made products was influenced by marketing variables. So, it was suggested that companies should regularly consider market research to identify the most important psychological factors affecting consumer taste and preference of their products in order to set their market strategies [12].

## 2.2. Purchase Channel

Sight and touch are essential senses responsible for purchase decision of textile and apparel products. Purchaser always likes to feel the handle of and see closely the purchased textile product. Traditionally, consumers purchase textile and apparel products from a physical actual store. Nowadays, Online or electronic shopping has several advantages for many customers such as convenience and easy comparing different items. However, selling textile products online is a great challenge for textile companies as a purchaser could not feel and touch available products. Researchers have studied purchase decision of textile products online and from actual physical stores.

### 2.2.1. Physical Actual Store

Research studies were carried out investigating consumer behaviour and purchase decision in actual stores. These studies were concerned with retail outlets showroom, store attributes, senses used in product recognition, window display and landscaping and shopping mall environment for shops placed in shopping centres.

Paulins *et al.* in 2003 chose adult women over 18 from telephone directory in USA to carry out a survey investigating store features influencing consumer preference to store. They showed that there are several store attributes affecting consumer preference to store, namely, type of clothing desired in stock, outside store appearance, shopping hours and advertising. Besides age and education had an impact on customer's perception of store attributes. These findings would be an effective guide for merchandisers to set attractive store attributes for targeted customers [13].

Riddle and Köksal in 2007 pointed out that Turkish purchaser from Izmir city prefer buying children's clothing from independent shops [14]. Nelson-Hodges and Tullar reported that Russian consumers prefer purchasing apparel products from stores rather than street markets as it was believed that the latter has low quality. Consumers in Russia would recognize foreign brand names, however, the use of brand name concept is underdeveloped in Russia. Clothing attributes con-

sidered by consumers were quality, company and brand name, retail channel, and country of origin [15].

Michon *et al.* in 2008 explored how the shopping mall environment influences the shopping experience and approach behavior of female fashion shoppers including fashion-oriented, middle-of-the-road consumers, and followers. The field of the study was a regional shopping mall located in Northeast Canada and the subjects used were female mall shoppers. Mall atmospherics positively influenced hedonic shopping value and approach behavior among all female shopper fashion clusters. However, it only impacted the shopping goals of the middle-of-the-road fashion. So, this group is highly targeted by mall developers. Mall operators could use these findings to work on attracting shoppers, increase the number of visits; extend shoppers trips and increase the purchase per trip [16].

Clarke *et al.* in 2012 explored women sensory experiences while shopping in small fashion boutique in the North West of England. They revealed that tangible and intangible (i.e. smell, lighting and presence of owner-manager) features of small fashion boutiques affect buyer experience. The most important sense was the sight followed by sound, smell and touch [17].

Mower *et al.* in 2012 conducted an online survey using convenience sample of college students from a large American university studying about external variables influencing consumer response to store. They found two external variables i.e. window display and landscaping had positive impact on consumer responses in terms of liking, mood, and patronage intentions however did not have an impact on pleasure or arousal [18].

In 2014, Maheswari *et al.* studied the consumer preference of the textile retail outlets in Coimbatore city in India. They showed that costumers give more preference to the variety of collections in the showroom rather than being affected by celebrities presenting advertisement on TV and radio. They advised retailers to increase public awareness of their collections. This would be by making innovative and attractive advertisements that may influence customers visiting their showroom. Moreover, hospitality and promotional activities like offers, discounts and compliments to attract consumers would be an effective marketing tool [19].

### 2.2.2. Online Purchase

Online or electronic shopping is a purchase process conducted via internet using web browser or mobile

app. A buyer must have an internet access to shop. Researchers investigated electronic shopping in terms of choosing identical garments while buying online and offline, display of product, available data and information, visual merchandising, website and mobile apps' ease of use and consumer having internet access.

Data collection is an essential process in studying consumer behaviour towards design products. Therefore, Englis and Solomon in 2000 designed a web-based data collection technique by which consumer could provide rapid and visual response to researched products. This could give researchers and companies a detailed and rapid image of consumer behaviour [20].

Visual merchandising (VMD) is a strategic tool in fashion marketing attracting consumers and communicate brand image. Ha *et al.* in 2007 were concerned with online visual merchandising VMD. They analysed VMD features of 100 websites selling apparel products. A total of 50 US and 50 Korean web sites were content analysed in terms of environment, manner of presentation, and path finding. Their analysis revealed that many visual merchandising features and elements employed in offline stores were taken up online with some modifications. Moreover, they offered a frame research (including classification of path-finding factors, environmental factors, product presentation factors, and their sub-categories) could be used in investigating online apparel VMD. They provided a comprehensive list of online VMD elements from apparel web sites favoured by College-student consumers which could be used by companies to benchmark their websites [21].

Saiki in 2008 observed and analysed the display of digital images found on 57 costume and textile collection websites. A guideline for websites of clothing and textile museums was recommended. Proper display of collection artefacts would be achieved using dress forms or mannequins and enlargement features as the close up visuals are important information for the audience [22].

For e-retailers, Yang and Young in 2009 focused on the need of e retailers to effectively interact with consumers in aiding consumers' purchasing decision using easy-to-use web interfaces. Employing participants took place with e-mail messages being sent to members of the database of the opt-in-e-mail marketing company, United States. They suggested three key customized site features affecting consumer attitude toward internet apparel shopping and could encourage a consumer to purchase. These were interactivity, customized alter-



native information availability and virtual experiences. Interactivity between individual consumer and sales people could enable a customer to choose the most suitable item from a variety of apparel items. This establishes a positive link between them. The availability of customized alternative information would make buyers more confident during the process of decision making. Virtual experiences enable consumers to understand a product before purchasing it [23].

Laohapensang, O. in 2009 evidently showed that the most influential obstacle for Thai consumers to shop online was using the internet rather than consumers' attitude which affects online shopping elsewhere [24].

McCormick and Livett in 2012 analysed the influence of fashion garments presentation online on consumer behaviour. Consumers recruited to participate in this study were females aged 18-24 of high fashion interest in UK, as the most common set of e-shoppers tend to be young; the 18-24s can in fact be placed as the highest demographic group of internet users at 79 per cent. They focused on two key elements aiding the interaction between the consumer and fashion products. These were functional product viewing and aesthetic fashion information. It was found that allowing the consumer to customize the viewing process would make the shopping easier which increases intention to buy online. They suggested three main factors affecting the viewing process of fashion garments online (i.e. usefulness, ease of use and enjoyment). Providing customers with style advice would be an important enjoying factor for e-shoppers. As apparel could be a social tool in the lives of young people social media could be used as a highly useful marketing design tool for apparel companies as it provokes entertainment. All these aspects would enhance fashion garments' sales and build brand loyalty [25].

Magrath and McCormick in 2013 investigated marketing and visual design of a fashion retailer's mobile app in UK. They identified four framework categories of fashion marketing elements, namely, multimedia product viewing, informative content, product promotions and consumer-led interaction. Five design elements were suggested for informing consumers regarding products and services. These were practical product information, practical services information, trend information, style advice and social media content. All these findings indicate that mobile apps would be an essential tool for determining the importance of fashion products assisting retailers to implement, enhance or dismiss the stimuli from their app. This would justify the

requirement for immediate analysis of the consumer's perceptions. Moreover, marketing design elements of mobile fashion retail apps could be able to visually portray their brand, personality and identity [26].

Uzan, M. in 2014 explored whether Swedish consumers choose identical garments online and offline using intrinsic and extrinsic product attributes. Intrinsic product attributes were: print, colour, material, natural fibres and fit. Extrinsic product attributes were: spring/summer, simple, match with specific garment, and wear on specific moment, something to have in wardrobe and the picture with the model. This was found highly dependent on the person and the product [27].

### **2.3. Price**

The economic climate has an important role in consumer behavior towards apparel products. It has been a factor in the success of value brands. Value brands offer a low priced version of current catwalk style. It has been increasingly playing an important role in the fashion market. It is suggested that the current market growth will be continued into the future. Smith, E. in her thesis (2004) used the most frequently tested variables in studies related to consumer purchase behavior towards apparel products to explore American consumer preferences for home textile products, namely, Price, colour, style, brand name/designer, fibre content, availability of packaged sets, fabric type, thread count and retail channel. The most important purchase criteria were price followed by colour and style for bedding; and price and colour for bath products [28].

Nelson-Hodges and Tullar in 2007 explored Russian consumers' adaptation from a socialist to a capitalist society (post-socialist markets). They showed that Russian consumers consider quality as a critical factor when purchasing apparel in terms of social benefits (e.g. look good to others). However, clothing plays an important role in the overall appearance, the emerging Russian market constructing new identities more than other products in their new roles and identities within a transitioning socio-economic context. So, this could be used by marketers in developing promotional strategies [15].

Ross and Harradine in 2010 studied the attitude of young consumers towards supermarket clothing specially jeans using non-wearer trial sample and wearer trial group. Panel of judges consists of twenty four marketing students studying a specific branding and fashion module having a long purchasing life and have

an interest in fashion products. They generally expressed negative perceptions to style, quality and fit. This might be because the recognition of supermarket brand image is based on their core activities such as food. Besides, young consumers have already a well-established perception related to fashion products. However, the wearer trial group tended to be more positive. So, this group could be expected to be a potential consumer in later stages of the family life cycle. Therefore, supermarkets have a challenge in targeting a broad demographic. The study pointed out to the need for enhancing store environment to simulate high street fashion stores to attract this segment of purchasers [29]. Supermarket diversification and consumer resistance in children's apparel purchases against other traditional brands in UK were discussed by Kervenoael *et al.* in 2011. Purchase decision was found based on functional and intuitive factors and parental boundary setting. Consumers were found positively resist buying from traditional label providers and voluntarily choose supermarket clothing ranges [30].

Chang, L. in 2011 found that price and brand related to purchase intention [31]. Jegethesan *et al.* in 2012 pointed out to denim jeans price as the most important attribute affect purchase decision of Young Australian consumers' followed by brand, country of origin and then style [32]. Price was found the most important factor when buying children's clothes in Izmir, Turkey [14].

#### 2.4. Promotion

This is one of the marketing elements used to communicate a product to a customer. This is to raise consumer awareness of the product. Brand awareness is one of the most common uses of promotional items establishing product image for consumer.

##### 2.4.1. Branding

Branding aims at creating significant image and name of product leading to consumers' loyalty. Saunders and Watt in 1979 indicated that increasing number of textile companies producing man-made fibres in UK use branding to make their products more valuable in the market. This approach was not enough but controlling of product end use should be adopted. As there are large number of manmade fibres available in the textile market, consumers would become confused with the significant attributes of each type. Therefore manmade fibre producers should work on advertising their products characteristics rather than brands [33].

Developing a product image is an important marketing tool employed by retailers. Chen-Yu and Kincade in 2001 reported that there was significant positive relationship (in the alternative evaluation stage) between product image and perceived quality, performance expectation and price participants were willing to pay for a product. However, there was no direct relationship between participant's satisfaction with the product and product image. Subjects were limited to 120 university students, USA. Sweatshirts were used as the sample product category [34].

##### 2.4.2. Advertisement

This is a form of marketing communication employed to promote a product or service. Hsu and Mo in 2009 examined Taiwanese consumers' response to incomplete information in print apparel advertisements in magazines. Consumers were found acting positively for missing information and tend to look for it in other sources. The design of print apparel advertising seems to be more important than detailed information included in advertisements [35]. Chang, L. in 2011 found that most teenagers in Changsha city in China would consider purchasing celebrity-endorsed apparels. Therefore, it is necessary for marketers to put consumer-celebrities relationship into consideration in terms of internal motivation and product attributes [31].

#### 2.5. Fashion Apparel (Slow /Fast/ Luxury)

Fashion apparel is the unique popular style and trend in which a person dresses. Workers in the fashion industry aim at making profit while satisfying consumer needs and demands. Evans, M. in 1989 studied consumer behaviour towards fashion in UK. She suggested that consumers became more independent and seeking self-expression more than newness [36].

Hlavaty *et al.* in 1997 classified South Korean female apparel shoppers into four unique fashion opinion leadership groups that could be incorporated into marketing and retail strategies. These groups were tradition-oriented/culture, economic-oriented/price, convenience-oriented/time and appearance-oriented/fashion conscious consumers. The best determinants differentiated between groups in terms of predicting group membership were lifestyle characteristics (including time consciousness, self-confidence, and venturesomeness), store selection attribute (including fashion appeal), clothing purchase decision making (including first impression) and employment status and educational level [37].

Slow and fast fashion industries are two contradictory processes applied in producing fashion products have been studied by researchers. Watson and Yan in 2013 investigated slow and fast fashion consumer decision process stages (i.e. purchase/consumption, post-consumption evaluation, and divestment) in western region of the USA, all participants were females above 18 years of age or older. The purchase/consumption aspects studied were buyers' remorse avoidance, utilitarianism, hedonism, and style/self-image congruence. Fast fashion consumers avoid remorse purchase inexpensive clothing, but slow fashion consumers focus on the concept of quality over quantity. Achieving hedonism was through shopping experience, stores atmosphere, social experiences, buying in large quantities, and "hunting" for goods for fast fashion buyers, and through a love for couture and art however for slow fashion buyers. For both fast fashion and slow fashion consumers the style of the clothing aligned with their self-image was an essential factor affecting of purchase/ consumption. However, fast and slow fashion consumers were different with regard to utilitarianism, the first maximize their utility by buying a higher quantity of clothing at a lower price, however the latter by buying clothes that is versatile, well fitting, consistent with their wardrobe, high quality, and an investment Retailers would use these findings to better understand the targeted consumer [38].

Fast fashion implies a personal and social experience and meaning management. Gabrielli *et al.* in 2013 summed up consumers fast fashion experience using keywords employed by participants. The most commonly used positive terms were freedom, fun, saving, speed and personalisation. The most commonly used negative terms were unnecessary, poor quality, short term, anonymous. In this study, 64 respondents from 500 contacted by a market analysis company in northern Italy representing a broad range of variables of the Italian population considered relevant to the behaviour under examination (age, sex, level of education, job) were used [39].

The market of luxury fashion brands grow rapidly in metropolitan China creating a significant global market. Li *et al.* in 2013 studied Beijing consumers' intention to pay extra. It was found that functional values over weighted social and symbolic values to pay more. This finding showed a growing market maturity. Marketers should pay greater attention to enhance the perceived functional and social values of the brands in order to uplift consumer attitude towards the brands which in

turn strengthen consumer engagement in purchasing process [40].

Ayman and kaya in 2014 showed that consumer attitude towards branded fashion apparel is affected by gender. 83% of the participants were found significantly buying branded apparel products (60% women/40% men). These results show that females in North Cyprus would like to purchase and wear branded clothing more than men. They indicated that men are highly influenced by social/cultural factors. However females are affected by marketing communication efforts such as television, advertising, magazines, catalogues and celebrities, and by both personal selling and direct marketing [41].

Giovannini *et al.* in 2015 studied generation Y consumption of luxury fashion in United States. There were found positive relationship between consumers' self-esteem and brand conscious leading to strong motivation towards purchasing strongly connected brands with them. This would build consumer brand loyalty and support purchase intention to luxury fashion products. As they prefer buying brand name supporting their view with their peers. Moreover, they chose brands reflecting their self-image. These findings indicated that it is important to understand generation Y "new comers" to luxury fashion market in the light of their personality and consumption motivations. Luxury fashion brands should build brand consciousness reflecting young generation of consumers [42].

## 2.6. Mass Customization

Nowadays, consumers are looking for products characteristics beyond these already exist in the market. In textile products area, consumers are interested in personalizing purchased products to satisfy their needs. Mass customization is a marketing and manufacturing technique producing custom-made quantity of an item with low unit cost.

Anderson-Connell *et al.* in 2002 proposed a consumer-driven model for mass customization in the apparel market. Subjects recruited were women consumers' sportswear in a college campus located in rural county, Atlanta. The widespread dissatisfaction was with fit and sizing in mass produced apparel and inconsistency of sizing within and between brands, and outlier sizing. So, it was suggested that future work should focus on customer satisfaction with fit and size. One of the barriers found in applying the mass customization was that some costumers were not confident



of playing the role of a designer. So, it was suggested to work on offering friendly using software and apps encouraging costumers to design their product easily [43].

Bae and May-Plumlee in 2005 indicated that there are changes in textile and apparel industry, including intensive international competition, unpredictable consumer demand, and market trends of variety and short product life cycle. It was suggested to focus increasingly on the consumer to meet these challenges. This would be by building effective textile manufacturing workflow for delivering mass customized product promptly in order to offer consumers convenience and accessibility. Using information technology, networking, and new manufacturing technology was recommended [44].

Na, Y. in 2009 believed that the analysis of customers' sensibility and preference is important in a market becoming increasingly more customer oriented. They proposed a Fashion Design Recommendation System (FDRAS) as an effective tool for textile and fashion design developing apparel products centred on customers' sensibility and preference. It is a User-interface tool that can suggest fashion designs according to the user's preferences. This system would satisfy the consumer's needs for a computerized design expert system and increase companies' output efficiency and reduce the developing cost [45].

### 3. CONSUMER DOMINATED VARIABLES

In this section factors related to consumer are discussed. These factors include consumer involvement, cultural influences, psychological factors, personality, social aspects, environmental considerations and age.

#### 3.1. Consumer Involvement

Consumer involvement is defined as a state of mind identifying the amount of physical and mental effort that a consumer puts into a purchase decision. Seo *et al.* in 2001 classified male college students in Georgia, USA by involvement level in purchasing casual wear (i.e. amount of time and effort spent by a consumer in clothing selection) into high, medium and low. This can be helpful in setting marketing plan. For high and medium groups, marketers have to work on attracting them by creating and developing new fashionable styles to capture them as they are highly experienced in purchasing. However, sale events (after or before holidays) could be effective for low involvement group [46].

Dewsnap, C. in 2001 explored bra consumer decision process. Focus groups were recruited and conducted in three separate locations within the Midlands and the South-east of England, UK. The sampling criteria were limited to four key variables: age, bust size, socioeconomic group and geographic location. Several factors including functional, physiological, psychological, psychosocial and economic were found affecting highly involved consumer. This would make buying process of bra less pleasurable and risky. Manufacturers and buyers should work on difficulties consumer face in buying bra. This is by achieving size standardization, manufacturing consistency, providing more reliable in store measurements and advice, offer highly trained bra fitters and sales specialists. This would facilitate buying process and make it more pleasurable making costumer shop more frequently. This could significantly aid market growth. The study showed the difference between "every day" and "special occasions" bra. The first is more dependent on function and utility and related to actual self-concept however the latter is more related to fantasy and pleasure so it is highly correlated with ideal self-concept [47].

Rahman *et al.* in 2008 reported that Chinese female college consumers of pyjamas as a low-involvement product were concerned with functional values rather than symbolic values. Comfort, fabric and quality were significant determinants in the purchase decision process rather than brand and country of origin [48]. Risius *et al.* in 2012 studied the influential factors of bra purchasing in older UK-based women. Several factors were found impacting their choice of bra including aesthetics (shape, attractiveness of bra, figure, appearance in clothes, lace and colour), comfort (shoulder straps, underwire, fabric, bra fit, generic, comfort), practicalities (importance of good quality, availability and buying, affordability choice of purchasing, options range and choice of bras), and support (to provide uplift, general support, to overcome breast sag). From the focus groups and interviews with participants, it was found that there are some differences between their choices in younger age and their choices in older ages [49].

#### 3.2. Cultural Influences

Consumers' culture including their beliefs, customs, arts establishing their way of thinking and behaving would affect their purchase decision and behaviour towards textile and apparel products.

Consumer lifestyle was found affecting the symbolic meaning associated with textile and apparel products. Researchers suggested that they are mostly purchased for their meaning rather than their function. Tastemakers in the apparel textile pipeline such as magazine editors and retail buyers play an important role in forming consumer desire for purchase [11]. Chang, L. in 2011 found no relationship between socio-cultural factors and teenagers' purchase intention towards celebrity-endorsed apparels in Changsha city, China [31].

### 3.3. Psychological Fields

Psychological factors refer to cognitive characteristics affecting consumer attitude and behaviour. These factors could influence consumer's way of thinking which could in turn affect his decisions.

Radeloff, D. in 1991 investigated the relation between the psychological type of clothing, textiles, and design students and their seasonal colour preferences for apparel. All subjects had completed a basic textiles class, an introductory apparel construction class, and a home furnishings class. Eight broad psychological categories of Myers-Briggs were used. These were extroverted and introverted thinking, feeling, sensing, and intuitive types. Summer and winter colours were significantly preferred followed by spring and autumn colours were the least preferred. The eight psychological types showed significant differences in seasonal colours preferences except for introverted thinking types. It was suggested that hue seasonal colour categories, value, and chroma can be used to elicit variations in human response to colour [50].

Yoo, S. in 2003 studied U.S. working females' preferences of business jacket design (i.e. jacket length, Pattern, Silhouette, Neckline Drop, Collar Style). In this study, visual stimuli was mailed to 1,500 randomly drawn working females across the U.S. Clothing design elements and their interrelationships, personal characteristics (i.e., age and ethnicity), psycho-social motivation (i.e., ability to modify self-presentation and self-monitoring), and physical profile (i.e., figure type) affected consumers' evaluation and preference of design [51].

Knight and Kim in 2007 investigated generation Y Japanese consumers' need for uniqueness, brand perceptions, and purchase intention of a US apparel brand. They found that consumers' needs for uniqueness and purchase intention were negatively related to the perceived quality, whereas the creative choice and purchase intention were positively related to the emotional

value. So, merchandizers and marketers should consider generation Y consumers need for uniqueness rather than product quality [52].

De Klerk and Lubbe in 2008 were concerned with symbolic-instrumental female consumers (i.e. confidence, strong interest in her personal appearance, loyalty towards certain brands and enjoying shopping for clothes). They showed that senses, emotions and mind are involved in females evaluation of apparel products quality during the decision making process. Both functional and aesthetical qualities were found responsible for consumer evaluation of apparel products quality [53].

Hume and Mills in 2013 confirmed the relation between self-image and intimate fashion products of female consumers. 119 female consumers aged between 18 and 60 were used as the archetypes of female consumers. They showed a strong relationship between inconspicuous products consumed privately to self-esteem and perceived sexy self. This study revealed that consumers purchase luxury intimate fashion products in order to enhance self-perceptions of uniqueness and self-image [54].

### 3.4. Personality

Consumer research studies showed that personal characteristics i.e. individual behaviour patterns, cognitive and emotion drive status consumption. However, it is hard to measure and use personality concepts in these studies.

Mulyanegara and Tsarenko in 2009 examined the effect of consumers' personality and values on brand preferences. Subjects in this study were local and international, female and male undergraduate students enrolled in the Business School at one of the leading universities in Australia. It was suggested that values had stronger impact on brand preference than personality. However, the relationship between personality and values could be employed by fashion managers in designing promotional strategies for the target segment [55].

Goldsmith *et al.* in 2012 examined three relatively high-level personality variables (namely materialism, brand engagement in self-concept BESC, and status consumption). They conducted online survey employing undergraduate marketing students at two US universities, one in the southeast and one in the Midwest. They found these variables important motivators producing an enduring interest in purchasing clothing

products and loyalty to clothing brands. Materialism and status consumption have positive relationships with clothing involvement, and BESC are positively related to brand loyalty for clothing. They concluded that consumers involved with fashion clothing would suspect sales approaches that bundle clothing into collections or outfits. Ads must show ultimate luxury. Brand managers should emphasize status and brand through these outlets [56].

### 3.5. Social Aspects

The social aspects, namely, facts and experiences affecting our attitudes, opinions, interests and lifestyle would impact our purchase decision and consumption behaviour. Dickson and Littrell in 1996 studied factors affecting socially responsible consumer behaviour to purchase apparel products from Alternative trade organizations (ATO). Data were collected with a nationwide mail survey (n =344) randomly drawn from the stratified mailing list of a North American ATO. Both attitudes towards the behaviour of purchasing apparel from the ATO and the apparel itself were found good predictors of purchase behaviour. However the first had higher effect than the latter [57].

Dickson, M. in 1997 discussed US consumers' knowledge of and concern with apparel sweatshops. There were found slightly higher level of concern for US workers versus foreign workers. Nevertheless, US consumers showed interest of supporting apparel industry problems including sweatshop by using labels to guide purchaser to boycott stores selling products made in sweatshops. It was shown that consumer activists are aware of products providing social values but this is unclear for non-activist apparel consumers. Research studies revealed that apparel consumers when taking purchase decision prioritize evaluative and aesthetic criteria to social ones even when buying from alternative trading organization. This study provided an understanding of consumer attitude to this issue rather than being predictive to the impact of this attitude in decision making [58].

Littrell *et al.* in 1999 studied marketing of ethnic apparel. Participants were females on the mailing list of an ethnic apparel catalogue "*Marketplace Handwork of India*". Data were collected via a nationwide survey mailed to 477 consumers. Respondents were randomly selected from a stratified mailing list of 90,000 individuals receiving the MHI catalogue. Two clusters emerged in their study namely 'Creative, Culturally Focused, Hedonic Consumer' and 'Classic, Pancultural

Consumer'. However, wearing ethnic apparel holds different meaning for each cluster; consumers in both clusters had common characteristics to the emerging population group of 'Cultural Creatives'. The emerging of this group suggests a large potential market interested in ethnic apparel could be a potential successful market [59].

Research studies showed the importance of informative and normative factors for adult consumers of apparel products. Pre-adolescent (8 – 12 years old) consumer behaviour were investigated by Anderson and Meyer in 2000. The sample was obtained using a mall-intercept method at a mall in the Pacific Northwest of the USA. Their study revealed that children in this age were influenced by normative conformity as they were concerned with others liking their purchased clothes and often purchased clothing to look similar to friends and peers. Moreover, they like to conform to both social and organised groups. For informative factors, both male and female children were affected by music, television and movie stars, the first were influenced by athletes and the latter were more affected by clothing adverts. This study indicated the importance of social factors for pre-adolescence. This would help manufacturers and sellers to better understand this category of consumer [60].

Mumel and Prodnik in 2005 tested the statement "All older people are the same" in the apparel business. Professional (employee or retired) and social (active or inactive) impact on apparel shopping were investigated for Slovene citizens, aged from 45 to 85 years. This study revealed that generally older consumers prefer buying comfortable clothes from small shops, need sales people advice, looking for cheap apparel, are not loyal to brands and not affected by fashion. They concluded that the tested statement is untrue and there are significant differences between the four segments in all study aspects except "willingness to shop apparel". Differences were more related to employment status than social activity. The differences become significantly clearer as the age of the consumer and their shopping enjoyment decline. Celebrities, friends and fashion magazines have minimal impact on socially inactive retirees in getting clothing ideas. In retired segment, it is important for marketers to focus on the socially active subgroup as they showed higher attitudinal brand loyalty, less price sensitivity, purchase apparel more frequently and spend more on clothing [61].

Gerasimos *et al.* in 2006 analysed young Greece consumer behaviour towards textile products. There

were found two categories of young consumers. These were the traditional consumers who buy textile products to cover their needs and others come from a safety socio-economic environment that entertain the buying process and could afford buying expensive brand-name products for reasons such as prestige and social projection. This category of consumers is a result of a particular social growth. Companies must consider each category in their marketing plan [62].

Gupta and Hodges in 2012 suggested that Indian consumers would be able to purchase products made by corporate social responsibility companies but they should be informed of its importance. They reported that retailers and marketers before connecting Indian consumers via corporate social responsibility must first gain consumer trust employing product's price and quality [63].

Ethical fashion is defined as fashion clothing that is produced under fair trade principles in sweatshop-free labor conditions, with efforts made to reduce the environmental harmfulness of the process [64]. Jegethesan in 2012 pointed out that ethical attributes were not important factors for young Australian consumers when purchasing denim jeans [32].

Shen *et al.* in 2012 revealed that few participants in their study in Hong Kong were aware of fashion brands selling socially or environmentally responsible apparel. However, respondents expressed their willingness to support ethical fashion business. They indicated that ethical fashion apparel has not been well promoted. Awareness level of this issue could be raised using consumer education. They suggested that consumer concern, knowledge and beliefs influence consumers support for ethical fashion purchase behaviour. This shows that retailers need to work on promoting sustainable and ethical fashion products [65]. Phau *et al.* in 2015 found that Australian consumers' are aware of negative impacts of sweatshops. They tend not to buy luxury products made in sweat shops and pay more for luxury fashion apparel not made in sweatshops [66].

### **3.6. Environment**

Environmental marketing or green marketing is concerned with marketing of products preferred for environmental reasons. Hustvedt and Dickson in 2009 reported that American consumers' interest in purchasing organic cotton apparel was based on the benefits of organic agriculture to the environment rather than it is a fashion trend [67].

Gam, H. in 2011 investigated the importance of three determinants (i.e. fashion orientation; shopping orientation; and environmental concern and eco-friendly behaviour) affecting the purchase decision of eco-friendly clothing EFC of young female consumers in the Midwestern USA. Fashion leaders did not show their intention to purchase EFC because available EFC was not innovatively fashionable. Consumers were found having joy and fun in buying EFC, however high price of these products impeded buying decision. There was positive relationship between consumers' eco-friendly behaviour and environmental consumption. This study found that consumers have limited experience with purchasing EFC because of its low availability. Development of educational materials would positively enhance consumers' awareness of EFC [68].

### **3.7. Age**

A study conducted in 2007 in Izmir, Turkey, found parents were the decision takers for choosing children clothes. However, children start choosing their clothes from six years old [14]. Grant and Stephen in 2005 explored the key factors affecting buying behaviour of "tweenage" girls (12-13 year old) attending state and private schools in UK. They were found highly affected by brand name as they tended to pay more for "cool" branded products approved by their peers and parents. Moreover, they inclined to buy clothes reflecting their personality and self-image. It was concluded that marketers should target this segment of consumers by providing a range of branded "cool" fashionable apparel with good quality [69].

Leung and Taylor in 2002 studied fashion buying criteria of x generation consumers in Hong Kong. The participants considered fitting, personal preferences and design to be the three most important factors when buying fashionable clothing. This study suggests that targeting generation x could be employing five factors including store layout, good service, fashion and general magazines for fashion information, exciting ads and high quality. For product qualities, they need fashion product reflecting their personalities through unique design, which was the third most important factor. The brand name was the least important factor [70].

## **4. CONCLUSIONS AND IMPLICATIONS**

This study reviewed research studies concerned with consumer behaviour towards textile and apparel products. However, it is believed that textile products' visual and physical characteristics has a great impact



on consumer buying decision, limited studies were found investigating the relation between textile product attributes and consumer purchase decision. Most of these studies were concerned with preference of product attributes. Therefore, it is proposed to extend consumer behaviour studies in textile and apparel area with special concern of fit, comfort and performance. The importance of the meaning held by textile and apparel products was pointed out researchers in USA and South Korea. Moreover, the country of origin is reported as an important part of textile product that could motivate or discourage consumer to buy a product.

Purchase channel has been an important concern for researchers as it constitutes the environment of buying process. This environment affects the consumer purchase decision. In USA, factors affecting buyers behaviour from actual store were: type of clothing desired, outside appearance of the shop (such as window display and landscaping), shopping hours and advertisements. In Canada, females and especially middle of the road consumers were reported like buying from shopping malls. Independent shops were preferred by consumers in Izmir city, Turkey. However, Russian consumers (after communism) prefer buying textile products from apparel shops rather than street markets seeking products of good quality. A study carried out in India found that variety of collection available in showroom is essential for buyers and innovative and attractive ads and hospitality and promotional activities could attract purchasers to actual stores. In England, sight was the most important sense used in recognising actual stores followed by hearing and then smell. Touch was the least important sense in buying apparel products from store.

However, in some countries consumers don't have access to internet impeding online shopping. Electronic shopping has been an effective alternative purchase channel for textiles and apparel products in other countries. Researchers have been concerned with developing data collection techniques to get detailed information related to apparel products. Visual merchandising of textiles and apparel products has been the concern of marketing researchers. It was found that many visual merchandising features and elements employed in offline stores were taken up online with some modifications.

Proper display of collection artefacts including 3D presentation, enabling enlargement features, customize the viewing process was suggested to increase inten-

tion to buy online. Interactivity, customized alternative information availability and virtual experiences were three key customized electronic site features proposed by researchers to affect consumer attitude toward internet apparel shopping and could encourage a consumer to purchase. Mobile apps have been increasingly becoming an important tool used in electronic shopping for determining the importance of fashion products assisting retailers to implement, enhance or dismiss the stimuli from their app. Matching of offline and online consumers' selection for textile and apparel products was found highly dependent on the person and the product.

Price of apparel products is a crucial factor affecting consumer purchase decision. Studies carried out in USA, Australia and Turkey showed that price is the most important factor-affecting consumer purchase decision and overweight other product attributes. Value brands of apparel products have been increasingly playing an important role in textile, apparel and fashion market. Supermarket clothing market could be a thriving market for both young and children consumers in the near future.

Creating significant image and name of textile and products were found leading to consumers' loyalty, however not enough for marketing man-made fibres. Advertising of textile and apparel products could be carried out using various media. Printed advert in magazine is one of the promotional tools. A study conducted in Taiwan found consumers highly influenced by the design of print apparel advertising rather than detailed information included. Using celebrities in advertising of textile, apparel and fashion products is effective for teenagers in China.

Consumer purchase decision towards fashion apparel has been studied. However, fashion is always seeking newness and uniqueness, UK consumer were found more self-expressive than following fashion. Fast and slow fashion consumers seek product conform to their self-image, however there were differences in terms of utilitarianism concept. Mass customization is an alternative marketing technique by which manufacturers and buyers could be able to satisfy customer's needs and wants promptly. Females were found buying fashionable apparel more than men. Consumer involvement level should be considered by manufacturers and sellers as it influences purchase decision making.

For variables related to consumer, there were found impact for consumer lifestyle in recognizing the symbol-

ic meaning of textile products. Consumer was found with good intention of buying textile and apparel products made in sweatshop-free labor conditions and ecofriendly manufactured products. However, they need to be well guided for these products.

The current study is considered stimulating for future research directions to academia and practitioners. It was found that designers, manufacturers, and sellers of textiles and apparel products should be up to date with target consumer behaviour, which is affected by several variables dependent on market and consumer.

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# Fabric Market: 2018 Global Analysis, Demand, Latest Trends, Growth in Manufacturing, Production, Present Scenario and Future Forecast Up to 2023

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Dallas, United States – March 28, 2018 —

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This report splits Fabric market by Fabric Type, by Materials, by Fabric Motif, which covers the history data information from 2013 to 2017 and forecast from 2018 to 2023.

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Some of the top key players covered in the Fabric Market include:

- BERNHARDT textiles
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- Delius GmbH
- DESIGNERS GUILD
- DURALEE DESIGNER
- EDMOND PETIT
- Elitis
- Equipo DRT
- Gaston y Daniela

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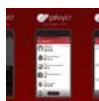
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## Hearth & Home

July 2017



Furniture is Nantucket by Kingsley Bate, a classic; cushion fabric is Glen Raven's Flagship Guava; pillows and colorful sail are Glen Raven's Midori Indigo. The setting is Lake Thun in Switzerland.

## Trends in Fabric

By Mark Brock

*There's a vast array of casual fabrics launching for the 2018 season, with colors and textures for every taste.*

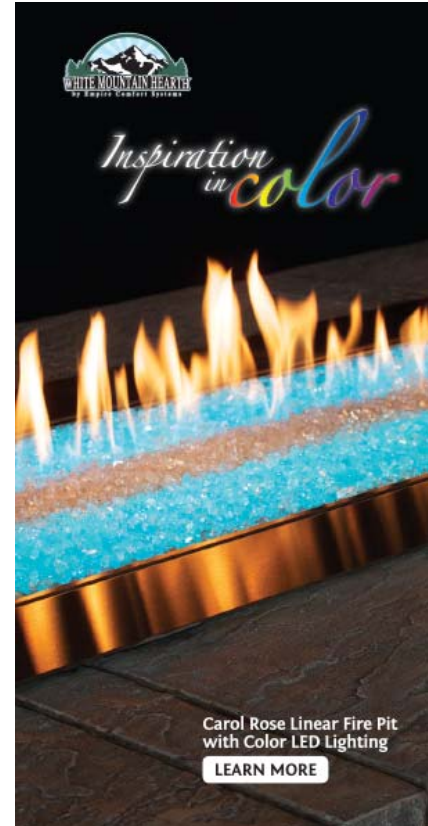
When furniture manufacturers and specialty retailers make their buying decisions for the 2018 season, they will be greeted by an amazing variety of casual fabrics, representing an outpouring of creativity from the industry's leading fabric designers. No single trend dominates in this vast array of offerings, but the variety of colors and designs available is impressive.

*Hearth & Home* interviewed seven of the top designers working in the field of outdoor fabrics. As you browse the following 12 pages you will see 36 examples of their work this year. As you do so, consider the hours, effort, travel, and thought that went into the creation of these fabrics that should help you post a strong sales year in 2018.

Designer Kate Korten sees potential in the widely-hyped "Millennial Pink," while home décor designer Richard Frinier continues to advocate for a classic neutral palette that spans tone-on-tone hues. Sunbrella designers have taken the basic principles of traditional hand weaving and applied them to modern manufacturing, creating fabrics with a hand-crafted look and feel.

Joe Ruggiero, whose home decor offerings include a signature Sunbrella line, continues to see growing popularity of the color indigo, replicating one of the world's oldest dyeing techniques. The Outdura fabrics team has created collections ranging from the classic to the contemporary, the rustic to the refined, and the timeless to the trendy.

Seven collections from Phifer closely mirror the look of fabrics from the interior world yet take it up a notch to complement today's outdoor color demands. And Tempotest Home



## Key Trade Shows and Events

### ICFA Preview Show

July 17 - 19, 2018

The Merchandise Mart

Chicago, IL

(800) 677-6278

[www.casualmarket.com/show-info/icfa-preview-show](http://www.casualmarket.com/show-info/icfa-preview-show)

### Casual Market Chicago

September 25 - 28, 2018

The Merchandise Mart

Chicago, IL

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[More Events »](#)

## eNews

Castelle's 2019 Introductions Include Traditional Design, Madeleine Collection

designers see continued strength in blue, beige and gray, but have also identified rust as a potential new direction.



Millennial Pink was the hit of the Milan show.

### Designer Kate Korten Sums Up Color Trends in One Word

When you ask Kate Korten to sum up color trends for casual fabrics in the coming season, she offers a one-word description – “color.” She sees color, other than beige, becoming increasingly important as evidenced by many different color trends coming to the forefront of fashion and home décor design.

“The Millennial generation, in particular, is not afraid to buy rather daring color combinations,” said Korten, who leads a full-service design consultancy for the home furnishings industry. “For retailers, this means if you want to attract Millennial shoppers, you shouldn’t be afraid of color either.”

Insights into the use of color by Millennial shoppers was evident during the Milan design week this year as so-called “Millennial Pink” became the most ‘Instagrammed’ color in furniture design. This new color trend has been described as a muted shade between blush and mauve and has become a trend color for fabrics and frames.

“Millennial Pink is kind of a mauve color, not as dusty as the 1970s mauve,” Korten said. “Consumers can pair it with darker fabrics, jewel tones and bright colors for a fresh new look.”

For the coming season, Korten sees several color trends that offer opportunities for specialty retailers in the hearth and patio segments.

“Color schemes start with a base of dusky jewel tones and are paired with upbeat mauves, bright shell pinks, powder blues and yellows that flare toward the mustard or deep cadmium,” she said. “Although still in play, Pantone’s color of the year ‘greenery,’ may have missed the mark by a few shades; emerald had much more visibility in Milan than any other single color.

“The important blues,” she continued, “are petrol blues, ranging in value from very deep to almost aqua. The reds are deep and heading toward warm claret. But what makes this color scheme new is the pairing with the new mauves, powdery blues and the punch of brightened pastels.”

Along with trends in color, casual fabric patterns are also shifting. Here’s how Korten reads the tea leaves:

“In terms of fabric trends we can finally put the old formula of ikat, animal prints, trellis, and big flat grid patterns behind us; we are also seeing fewer traditional patterns. Designs may incorporate an ikat style, but no more traditional ikats. The global theme hasn’t gone away and geometrics are strong.”

While fabrics are often the focus for outdoor furniture shoppers, Korten also sees several important trends in furniture design emerging with the new season: the severe rectangular

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Award-winning designer and manufacturer of aluminum casual furniture Castelle is set to introduce for...

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### Sunset West Showcases New Outdoor Products for Summer 2018

Thursday, July 12, 2018



Sunset West recently unveiled two new collections at the HD Expo in Las Vegas at Mandalay Bay, including...

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## Reader Comments

**Elaine Smith,**  
**Pillow Obsessed President and Designer of Elaine Smith**  
West Palm Beach, FL

When I started in this industry I was brand new to the ‘Casual Club.’ I related to the word Outdoor, but did not initially connect the meaning of Casual. Some of it was as foreign to me as football plays are still today! It was like a different language. *Hearth & Home* magazine was one of the trade magazines that became my industry ‘text book/dictionary’ for my Casual industry classes.

Everyone can gain by reading *Hearth & Home*. It keeps us in touch with each other, and discusses trends and happenings. I use it to train new staff members on what this industry is all about. *Hearth & Home* has a finger on the pulse of this ‘world’ and helps us better understand our specific challenges. It helps us to succeed together in this space.

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modern look for outdoor furniture is being replaced by more organic or curvilinear forms; there is a trend toward string or string-like linear designs; furniture that is lit and lit accessories are still important, as is outdoor lighting; and the category of outdoor accessories is expanding.

With so many choices, what advice does Korten have for specialty retailers?

“Consumers have certainly embraced outdoor living as a lifestyle, and when you are dealing with the outdoors, shoppers are ready to have more fun with it, which means the use of unexpected, sophisticated color combinations. **Specialty retailers know their markets well, so they can select fabrics based on their customers' tastes and trends.**”

“You don't want to overwhelm shoppers with too many choices, but retailers and interior designers want to be in a position to say, this is who you are and this is how your outdoor space should look. You let the customer know they have good taste and help them express it with their furniture and fabric selections.”

### Glen Raven Launches New “Makers” Collection of Sunbrella Fabrics

While **advanced technologies in yarn creation**, weaving and fabric finishing are essential to today's performance fabrics, Glen Raven Custom Fabrics is launching a new casual fabrics collection that reminds everyone of how essential craftsmanship and artistry are to textiles that add beauty and comfort to our lives.

“Our latest introduction for the casual market, the ‘Makers Collection,’ is an expression of values celebrating human creativity, craftsmanship and individuality through fabrics,” said Greg Voorhis, Design director for Sunbrella. “We have taken the basic principles of traditional hand weaving and applied them to modern manufacturing. The collection honors the beautiful imperfections of the handmade and preserves the traditional element of craft and art.”

**The world is overloaded with uninspiring products of all kinds. Glen Raven has identified a trend in which consumers are looking for craftsmanship and artisanal designs in the things they purchase, including fabrics.**

**“Consumers are craving unique items that reflect their individuality,” Voorhis said. “Developing new yarns and weaves with artisanal flair empowers individuals to use our textiles to become makers of their own.”** Examples of some of the fabrics from the new collection include:



#### Cast Sable and Cast Horizon

Introduces a soft texture woven with heathered yarns, casting a gray overtone to evoke a vintage aesthetic.



#### Gateway Fuse and Gateway Indigo

A combination of two different yarns gives this stripe more textured color and character; the Indigo colorway features the tonal blocking trend.





#### Blend Indigo

A textural solid woven with mélange yarn to give color and depth with the aesthetic of heavy wool.



#### Artistry Indigo

Mimicking a backstrap hand-woven textile, this fabric was inspired by Peruvian weavers, creating an authentic one-of-a-kind look.



#### Canvas Cyan

A bold, bright blue was added to the selection of Canvas fabrics to round out this collection.



#### Adaptation Indigo

Mixing matte colors with metallic accents, this pattern leans more toward the contemporary and showcases the influence of technology, reminiscent of hand-forged metal designs.



#### Midori Indigo

Inspired by traditional Japanese dyeing techniques, this textile has a handmade look.

“Performance is key for the casual market, but the design and hand of textiles is just as paramount,” Voorhis said. “Homeowners are creating luxurious outdoor spaces that are an extension of their homes; their outdoor spaces are a reflection of their individuality as much so as the inside of their homes. Our Makers Collection allows them to curate an outdoor experience that celebrates their creativity.”

#### Richard Frinier Fabrics Reflect Urban Influences, Neutral Color Palette

Internationally acclaimed designer Richard Frinier found inspiration for his latest collection of Sunbrella fabrics from the architectural style and play of light inherent in urban artisanal studios and lofts. His latest Studio Collection sweeps in the essence of wide-open spaces, high ceilings and walls of glass that allow natural light to fill a room.



“We mused over the trend toward a return to the urban lifestyle, and worked to capture some of the elements of that architectural style as well as its interesting layers and textures in the constructions, patterns and color ways of the Studio Collection,” said Frinier, whose textile, furniture, lighting and accessory designs are sold in more than 80 countries worldwide.

Frinier’s Studio Collection is a refined yet approachable mix of graphic grid and linear patterns presented in neutral shades, with interesting layers and textures. Designed to be mixed and matched for myriad of easy-to-style textile design solutions, these fabrics subtly capture the infusion of beauty and practicality inherent in today’s urban spaces. Patterns in the collection include Space, Studio, Urban, Graphic, City, Cityscape and Duck Stripe.



#### Space

Lightweight construction accented with the artisanal appearance of hand-weaving.



#### Studio

An evolution of Frinier’s popular Chino Twill textile design woven with chenille yarns and a diagonal pattern in an array of soft and tonal textures.



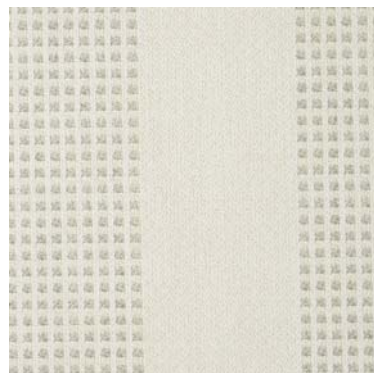
#### Urban

Exemplifies the dramatic appeal of performance fabrics designed with an artisan’s sensibility.



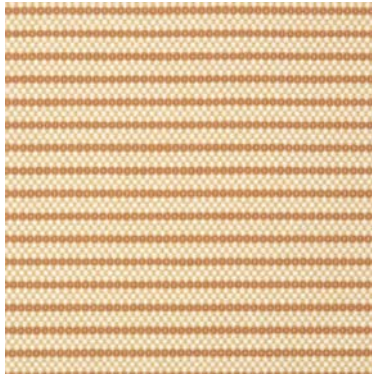
#### Graphic

Illustrates the softer side of modern lifestyles and living spaces with a raised grid pattern inspired by the energy of city dwelling.



### City and Cityscape

Present distinctive and balanced grid patterns in a reversible jacquard weave, embracing the complex and compelling network that links people and places together.



### Duck Stripe

Classic box weave and pinstripe pattern complementing Frinier's existing Duck construction for Sunbrella.

In terms of color ways, Frinier continues to emphasize the use of a classic neutral palette that spans tone-on-tone hues and subtly contrasting color ways blended together for a rich and luxurious appearance.

"I continue to be an advocate of neutral and tone-on-tone, or low to medium contrast colors as they serve as a beautiful canvas from which to accessorize and personalize," Frinier said.

"I put a lot of emphasis on the textural aspects of the constructions and also incorporate Sunbrella's chenille yarns, which allow light to play upon the surfaces and create design elements of color, depth and texture."

Frinier's color palette spans whites, beiges, taupes, grays, various greens, a lighter soft blue, an indigo blue and also sun-washed accent colors to bring subtle complexity to the overall collection.

"In Milan during this year's Design Week, we saw everything from minimalism to maximalism, neutrals and pastels, black and white, navy combined with neutrals, and a mix of secondary and tertiary colors," Frinier said. "We also saw shades of red, yellow-oranges, and blues and greens that were very grayed and very popular."

With Pantone selecting green as the color of the year, Frinier confirms that darker greens continue to be the new black. This trend, which first emerged in fashion, is growing in home furnishings and interiors, he said.

"Green is a leading color in everything from olive greens and medium hues to dark foliage greens," he said. "We are also seeing a trend toward a much darker black ink green that's so dark you can only see that it's green when the light hits it the right way or if the textile has a chroma shift effect."

---

### Phifer Features Newest Patterns and Bestsellers in Seven Collections

Phifer's 2018 color trends boast seven carefully-cultivated palettes featuring the newest pattern and color findings alongside industry bestsellers. Overall, the colors are cooler and cleaner, appearing more mindful and minimalistic as they are slightly moving away from the heavy, yellow-based palettes of the past. At the same time, there is optimism in the air, and playful brights remain important as consumers desire an element of surprise.

"Our color collections closely mirror that of the interior world then take it up a notch to complement today's outdoor color demands," said Monica Thornton, Phifer director of Design. "Monochromatic color schemes encompass five of the seven groups, where color builds from one base hue and extends into numerous shades. These same color groups are balanced by transitional neutrals with subtle gray undertones making these palettes relevant for today's consumers. The remaining two trend collections celebrate optimism, nostalgia and adventurous outdoor living with coastal palettes pulled from the islands and the Cape."



There's definitely a push to more mid-century pattern styling. Geometrics and abstract patterns continue to grow in importance for the Phifer consumer as these looks are becoming more trusted and mainstream in the interior home. Below are descriptions from Phifer's seven new outdoor fabric collections:



#### Into the Blue

Creating optic harmony, the Into the Blue Collection features monochromatic hues paired in a classic way. Traditional Navy pairs with Chambray and the use of bright white, and a gray-based neutral, feels clean and minimalistic.



#### Return to Eden

Embracing well-being, health and vitality, Phifer's Return to Eden palette marks the natural transition of Blue as it moves into Green. Monochromatic pairings such as Spruce and Abyss are calming and seductive when paired with contemporary neutrals.



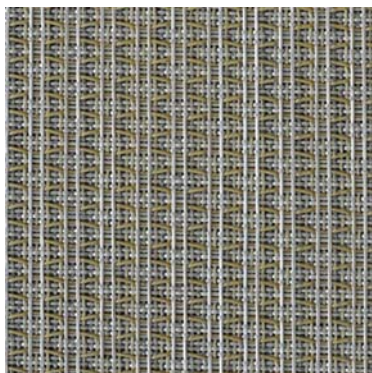
#### New Horizons

Inspired by vibrant sunsets and luxurious interior hues, the New Horizons Collection features monochromatic yet diverse colors that somehow complement each other. Burnt Orange and Tango pair with creamy citrus pearl and mushroom for a hint of liveliness that still offers a natural elegance.



#### Home at Last

Soothing blues with green undertones such as Surf and Mercer pair with warm, homespun golden neutrals for a comforting embrace. Blending the past with the future, this palette is perfect for the evolving traditionalist who seeks relaxation and familiarity.



### Coconut Grove

Vibrant and expressive coastal island hues evoke a playful feeling. Bright white and pebble speak to optimism when paired with Blue Blaze, Persian Blue and Grass Green. Exciting and inspiring, this palette engages the adventurous at heart.

### Distant Shores

This tranquil yet crisp collection evokes coastal-inspired images of seashores, fishing villages and weathered clapboard cottages. Soft surf blue is the anchor for this nostalgic palette and pairs well with warm weathered gray and bright white. Nautical accents in Salsa give this soothing palette a splash of the unexpected.



### Luxe Life

Creating a sense of strength and dependability, the Luxe Life palette features industrious neutrals that are ready to work. Heavily influenced by mixed metal accents and organic brown, new heathered yarn introductions such as Mushroom and Sweater Gray speak to the intricacies of neutral color.

“Color is key but luster is a must for this season,” Thornton said. “Pearlescent Phifertex yarns are being used in

combination with powdery neutrals to create a soft, glistening force. These subtle combinations will create unseen optic depth in Phifertex sling fabrics.”

### Tempotest Home Identifies Rust as New Color Way

While Tempotest Home predicts that casual market standards such as blue, beige and gray will continue to be leading color ways for the 2018 season, they are anticipating growing popularity for orange and green musk, in vogue from last season, along with a new addition, the rust color way.

“The rust color way was very popular during Design Week in Milan,” said Jeff Jimison, National Sales director for Tempotest USA. “This is a great new color that can be matched with neutral colors, such as beige and gray, or with brighter colors, such as yellow and orange.”



*Clockwise From Top: Tempotest HomeAmericano Cocktail; Tempoteststar Home in Cardamom, Curry, Pepper, Cinnamon, Cumin, Vinaigrette Designs*

In terms of fabric patterns, Jimison says that block stripes will continue to be popular in a variety of iterations, including multi-line and multi-colored versions along with stripes in contrasting dimensions.

“A further variation on the block stripe will be popular using different textures and tone-on-tone colors,” he said. “Geometric designs, on the other hand, will tend toward squared lines and more rounded shapes. Two-color designs will also be popular, including black-and-white concepts.”

Based in Italy, Tempotest Home is well positioned to stay abreast of the latest in color and design trends internationally, including close contact with stylists in the U.S.

“One of the strongest directions for Tempotest is the creation of fabrics that are highly tactile without adding excessive weight to the fabrics,” he said. Examples of Tempotest Home’s offerings include the following:





#### Riga Pari

This fabric is a block stripe fabric of solution-dyed acrylic in indigo, inspired by outdoor lifestyles that range from seaside breezes to cocktails by the pool.



#### Riga Fantasia

Inspired by the elegance of a New York Penthouse, this fabric is a fancy stripe in colors of white, turquoise and beige and made of solution-dyed acrylic.



#### Ramage

If you can imagine breakfast in a country cottage, then you can imagine the inspiration for this all-over leaf pattern. Colors are white, gray and black.



#### Quadratinno

With metropolitan and contemporary influences, this small check pattern has the vibe of a business lunch. Printed on polyester, colors include white, green and black.

### Outdura Fabrics Featured in Four Collections

#### for 2018; Blue Leading Color Way

Outdura brand fabrics are being featured in four collections for the upcoming season, offering a broad array of colors, textures and design trends for virtually every taste and setting.

"Our collections range from the classic to the contemporary, from the rustic to the refined, from the timeless to the trendy," said David Meeks, director of Casual Furniture with Sattler Corp., the makers of the Outdura brand. "The mix of Outdura collections for 2018 reflect how we live today, celebrating life in the moment."

The four Outdura collections for 2018 include Island Vibe (tropically inspired with fresh and fun patterns), Trad and True (timeless patterns that capture elegance with an edge), Modern Mix (a contemporary group with trendy details) and Crafted (hand-crafted motifs in electric patterns with rustic charm.)

Among the array of colors within Outdura collections, blue remains a leader, with each fabric showcasing its own blend of blue hue, chroma and lightness. Examples of the Outdura fabrics for 2018 include the following:



#### Key West

Key West is a stunning tropical pattern featuring silhouetted leaves and is part of Outdura's Island Vibe Collection that was specifically designed with "escape ready" colorings. Striking designs pair well with varying textures to create a new take on tropical.



#### Tobago

Tobago is a combination of texture and tones that create a natural wood grain effect and is also part of the Island Vibe Collection.



#### Acapella

Acapella is designed with a graphic frame that produces a traditional quilted look. Acapella is part of the Trad and True collection that features bold and classic designs with timeless patterns and head-turning colorations that capture "elegance with an edge" for a new twist on traditional.



#### Jinga

Jinga is a multi-colored stria rib pattern that has quickly become a best seller for Outdura. Jinga is featured in the Modern Mix Collection that is comprised of "spot on" trendy designs offering a fresh perspective for the contemporary style.

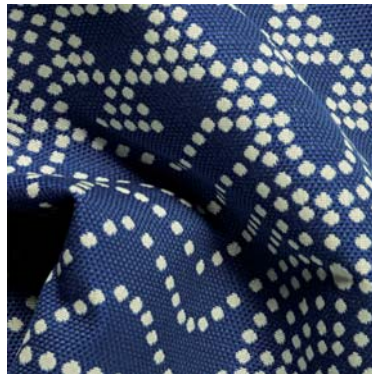


#### Rumor

Rumor, part of the Modern Mix Collection, is a best-selling boucle plain that features remarkable texturing.

"Our design team finds inspiration from a myriad of sources to create the most appealing

designs possible," Meeks said. "Inspiration comes from world events, nature, trends in society and the world of fashion. While the fabrics we are creating today are designed with the outdoors in mind, there's growing recognition that performance fabrics are ideal for all parts of the home, inside and out."



#### **Solstice**

Solstice is a graphic geometric that creates a patchwork design with ethnic flair.

Solstice is part of the Crafted Collection comprised of hand-crafted motifs for a "less is more attitude." One-of-a-kind rustic designs bring textures to life in this eclectic group.

---

### **Designer Joe Ruggiero Forecasts Continued Popularity of Indigo**

Indigo dyeing is one of the world's oldest forms of adding color to fabric, and home décor designer Joe Ruggiero is forecasting continued popularity of these deep, rich hues in casual furniture fabrics for the coming season.

"I had the opportunity to visit authentic Indigo dyeing studios in Japan," said Ruggiero, who has traveled the world for design inspirations and who supports a signature line of Sunbrella performance fabrics. "The look we've achieved with Sunbrella fabrics in Indigo is very similar to the colors created in Indigo studios using plant material. The color clarity is outstanding."

Examples of Ruggiero designs for Sunbrella in the color indigo include the following:



#### **Quilted Indigo**

Medieval knights who wore jackets of quilted materials close to their skin under mesh and mail inspired the classic diamond pattern of Quilted. With a soft hand and textural quilted surface, it conjures a time-honored style, popular in fashion and upholstery.



#### **Kuno II Indigo**

Inspired by Japanese tie-dyes and the ancient art of indigo dyeing, Kuno's simplicity of pattern recreates a rustic, hand-woven construction, including the imperfections of something that is hand-dyed or hand-woven. Kuno has a soft texture, and with its naïve dot patterns, it can be traditional or contemporary.





#### Medford Indigo

Blending the traditional French inspiration of 15th-century floral tapestries with a more contemporary comfort, Medford revives the simple elegance of the Loire Valley.



#### Kinza Indigo

Kinza was inspired by a Japanese Kimono design of the 19th century and is similar to a distressed herringbone. Highlighting an Ikat pattern throughout, Kinza has an intriguing optical effect.

“Design is universal, but to bring together high-end design, luxurious texture and performance, is an extraordinary thing,” Ruggiero said. “Our fabrics combine design and performance so you always get fade resistance, easy care and bleach cleanability.”

### 10 Casual Fabric Trends for 2018

#### Color

While neutral tones are likely to continue as the most popular, industry observers believe that color will be increasingly important, particularly with younger buyers who aren't afraid to try new things, whether it's color in the overall setting or with color pops from pillows and throws.

#### New color trends

Emerging color trends are likely during the new season, ranging from shades of rust to the eye-catching Millennial Pink that caused a stir during the Design Week in Milan.



#### Texture

Textural features will continue to be increasingly important for creating a more luxurious look and feel for casual fabrics; specialty yarns and innovative fabric formation techniques result in fascinating visual interest, reminiscent of hand weaving.

#### Indigo

One of the oldest forms of fabric dyeing, indigo continues to attract consumers who value its deep, rich hues; unlike indigo of ages past, today's indigo fabrics are color-fast and long-lasting.

#### Outdoors/indoors

Look for casual fabrics that could be easily mistaken for interior fabrics; the design sophistication of outdoor textiles continues to improve each year as consumers are encouraged to coordinate décor inside and out. Homeowners are also increasingly turning to performance fabrics for use indoors to cope with sun-drenched interiors, pets, kids, and messy adults.



#### Blue

The color blue is expected to continue as one of the most popular in a broad range of hues from



light to dark; blue is a classic that always looks great outdoors and seems to never go out of style.

### Green

Pantone named a shade of green as the color of the year and experts predict that green indeed will be a popular color for the new season; one caveat, however, is the green you see in casual fabrics may be a bit darker than the one that Pantone selected.

### Urban lifestyles

The country continues to embrace urban lifestyles, not only in the design of new residential communities, but also in the fabrics and other elements of décor selected for the home.

### Performance

Advancing technology in textile manufacturing means that designers can let their imaginations run wild; if designers can dream it, manufacturing centers can create it to be beautiful and long-lasting.

### Variety

In surveying the industry's leading fabric resources, the one dominant trend is a broad variety in colors, patterns and designs. The opportunity for specialty retailers is to select fabrics that will resonate with their customers, all within a well-merchandised environment where touching the fabrics and seeing them in an outdoor context can be a winning sales and marketing formula.



## More Stories in this Issue



### Perspective: Going Viking

*Say or hear the word "Viking" and your thoughts most likely turn to ruthless, seafaring warriors who terrified Europe from about 700 to 1100 AD. In the "Old Norse" language it also means a pirate raid.*

» Continue



### A Win-Win Transaction

By Bill Sendelback

*The purchase of Regency Fireplace Products by Swedish company NIBE is apparently a winning proposition for both parties.*

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### Noticing Outdoor

By Tom Lassiter



*As formal dining and living rooms give way to Outdoor Rooms, full-line furniture stores are becoming increasingly receptive to the casual industry's message.*

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### The Sweet Spot

By Tom Lassiter

*SunVilla's business model is to produce and present a limited number of transitional collections in the best-selling price points to the specialty retail network. In other words, it wants to make your life easier.*

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### The Short-Winter Blues

By Bill Sendelback

*The need is for cold weather, and high prices of fossil fuels. Barring that, manufacturers and dealers of pellet appliances are just singing the blues.*

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### A Tale of Two Coasts

By Bill Sendelback

*Being in the pellet fuel business may be one of the most frustrating and unpredictable endeavors that any sane person can enter of their own free will.*

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### Re-imagining Retail

By Tom Lassiter

*At Imagine Backyard Living, David Ghiz has created a new business model – no warehouse and no inventory.*

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### The Great Outdoors

By Mike Beirne, Senior Editor *Professional Builder*

*The home building community shares insights about using outdoor living features to help market and sell new homes.*

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### Accentuate Accessories

By Lisa Readie Mayer

*Barbecue accessories help to retain customers, boost sales and, perhaps best of all, draw customers back to the store.*

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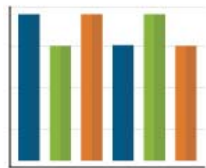


### Vignette with Variety

By Richard Wright

*Making use of a “bad corner” of his store, Buzz Homsy presents all the elements of an Outdoor Room® in little space.*

[» Continue](#)



### 2017 May Business Climate

*In early June, Hearth & Home faxed a survey to 2,500 specialty retailers of hearth, barbecue and patio products, asking them to compare May 2017 sales to May 2016. The accompanying charts and selected comments are from the 196 useable returns.*

[» Continue](#)



### Who Reads *Hearth & Home*? Henry Vanderminden IV, for one!

*Granville, New York*

[» Continue](#)



### Parting Shot: Far-out Furniture

*If you're in the patio furnishing industry, you certainly have seen your share of chairs and tables. But every once in a while along comes a design that stops you in its tracks. That's the way we felt about the following items.*

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## Materials and Clothing testing

Materials testing, including textiles, fabrics and leather, assesses a wide range of properties including physical performance and durability, colour fastness, flammability, material type and content, chemicals, and the effects of washing and cleaning.

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### Physical performance and durability

Materials testing covers a wide range of properties including physical performance and durability, colour fastness, flammability, fibre type and content, chemical analysis for hazardous substances. We can evaluate and measure performance attributes and comfort properties of all types of fabrics and textiles, including whole garments ranging from underwear and hose to high performance outdoor clothing. Our environmental test chamber can be varied from  $-40^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  and our sweating guarded hotplate is a breathability test at set conditions. Performance testing at SATRA also includes wash testing and fabric care evaluation.



### Accelerated ageing

SATRA has the facilities and expertise to artificially age fabrics. Equipment includes UV and weathering machines, and a wide variety of flexing and cyclic loading machines which can be used to fatigue an item and simulate a predefined period of use, after which we can assess whether it still meets the requirements of a particular standard, for example European legislation regarding the useful life of

personal protective equipment (PPE). SATRA also has considerable experience of conducting wear trials, using our own staff or coordinating assessments involving professional user groups.



## Leather

SATRA's experience and expertise in the technical aspects of leather can be traced back to our origins in 1919 when the organisation was formed to serve the footwear sector and whose predominant material at the time was leather. Over the years, SATRA has built up considerable knowledge on the production and use of leather in various product sectors worldwide including footwear, leathersgoods and furniture. SATRA was the first company to create a leather grading system accepted by Chinese tanneries and Western international brands. We called it 'leather one language' and it is still used today alongside SATRA's leather cutting and production efficiency systems that save manufacturers millions of dollars each year. SATRA laboratories can undertake a comprehensive range of physical testing on leather material and whole product made from leather including chemicals analysis to European and US standards. And our research team constantly works with SATRA member companies to help develop the next generation of leather products that are better performing, more comfortable and safer for the wearer.



## Materials research

Materials research is essential for successful product design and manufacture as performance, comfort and safety are increasingly important in determining consumer purchasing decisions and brand loyalty. SATRA's research team is often at the forefront of product development, for example investigating and helping to improve features such as breathability and thermal rating, and water, slip and impact resistance.



## Apparel testing

SATRA can undertake garment testing, textile testing and fabric testing, from underwear to performance outdoor clothing, from shirts to hose. We can measure performance attributes and comfort properties of all types of clothing in extreme environments - our environmental test chamber can be varied from -40°C to +50°C. SATRA's Sweating Guarded Hotplate - the only one in the UK - is a breathability test at set conditions.

Specific tests for clothing include: tensile and tear strength; abrasion resistance; dimensional stability (properties and changes following various pre-treatments such as washing and dry cleaning); durability (pilling and snag resistance, colour fastness to light, heat, water and other factors); water resistance; comfort and breathability; stain resistance; flammability and ignition properties (for example children's night-dresses); chemical properties including restricted substances; quantitative fibre analysis; compression hose (support stocking).

[Go back](#) [Start testing or ask us a question](#)

## Resources

[SATRA corporate brochure](#)

## Technical links

[Testing materials for light fastness](#)

[Fundamentals of breathability](#)

[Air permeability](#)

[Resisting the rain](#)

[Laundry test-piece service](#)

[Evaluating laundry products](#)

[Soiling and staining tests for upholstery](#)

[Oven glove testing](#)

[Testing for suitability to dry-cleaning](#)

[Evaluation of laundry products for EU Eco-label](#)

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[Testing stain removal products for carpets](#)

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# Textile Standards



ASTM's textile standards provide the specifications and test methods for the physical, mechanical, and chemical properties of textiles, fabrics, and cloths, as well as the natural and artificial fibers that constitute them. The textiles covered by these standards are commonly formed by weaving, knitting, or spinning together fibers such as glass fiber strands, wool and other animal fibers, cotton and other plant-derived fibers, yarn, sewing threads, and mohair, to name a few. These textile standards help fabric and cloth designers and manufacturers in testing textiles to ensure acceptable characteristics towards proper end-use.

## List of textile standards developed by ASTM:

Jump to:

GO

## Apparel

Designation	Title
<b><u>D3135 - 12</u></b>	<u>Standard Specification for Performance of Bonded, Fused, and Laminated Apparel Fabrics</u>
<b><u>D3562 - 14</u></b>	<u>Standard Performance Specification for Woven Drycleanable Coat Fabrics</u>
<b><u>D3655 - 14</u></b>	<u>Standard Performance Specification for Men's and Women's Sliver Knitted Overcoat and Jacket Fabrics</u>



Designation	Title
<u><b>D3780 - 14</b></u>	<u>Standard Performance Specification for Men's and Boys' Woven Dress Suit Fabrics and Woven Sportswear Jacket, Slack, and Trouser Fabrics</u>
<u><b>D3782 - 14</b></u>	<u>Standard Performance Specification for Men's and Boys' Knitted Dress Suit Fabrics and Knitted Sportswear Jacket, Slack, and Trouser Fabrics</u>
<u><b>D3785 - 14</b></u>	<u>Standard Performance Specification for Woven Necktie and Scarf Fabrics</u>
<u><b>D3994 - 14</b></u>	<u>Standard Performance Specification for Woven Swimwear Fabrics</u>
<u><b>D3995 - 14</b></u>	<u>Standard Performance Specification for Men's and Women's Knitted Career Apparel Fabrics: Dress and Vocational</u>
<u><b>D3996 - 14</b></u>	<u>Standard Performance Specification for Knit Swimwear Fabrics</u>
<u><b>D4035 - 14</b></u>	<u>Standard Performance Specification for Knitted Necktie and Scarf Fabrics</u>
<u><b>D4114 - 14</b></u>	<u>Standard Performance Specification for Woven Flat Lining Fabrics for Women's and Girls' Apparel</u>
<u><b>D4115 - 14</b></u>	<u>Standard Performance Specification for Women's and Girls' Knitted and Woven Dress Glove Fabrics</u>
<u><b>D4116 - 14</b></u>	<u>Standard Performance Specification for Women's and Girls' Knitted and Woven Corset-Girdle-Combination Fabrics</u>
<u><b>D4118 - 15</b></u>	<u>Standard Performance Specification for Women's Woven Coverall, Dungaree, Overall, and Shop-Coat Fabrics</u>

Designation	Title
<b><u>D4119 - 14</u></b>	<u>Standard Performance Specification for Men's and Boys' Knitted Dress Shirt Fabrics</u>
<b><u>D4153 - 14</u></b>	<u>Standard Performance Specification for Men's, Women's, and Children's Woven Handkerchief Fabrics</u>
<b><u>D4154 - 14</u></b>	<u>Standard Performance Specification for Men's and Boys' Knitted and Woven Beachwear and Sports Shirt Fabrics</u>
<b><u>D4155 - 14</u></b>	<u>Standard Performance Specification for Women's and Girls' Woven Sportswear, Shorts, Slacks, and Suiting Fabrics</u>
<b><u>D4156 - 14</u></b>	<u>Standard Performance Specification for Women's and Girls' Knitted Sportswear Fabrics</u>
<b><u>D4231 - 14</u></b>	<u>Standard Practice for Evaluation of Launderable Woven Dress Shirts and Sports Shirts</u>
<b><u>D4232 - 14</u></b>	<u>Standard Performance Specification for Men's and Women's Dress and Vocational Career Apparel Fabrics</u>
<b><u>D4522 - 14</u></b>	<u>Standard Performance Specification for Feather and Down Fillings for Textile Products</u>
<b><u>D4524 - 86(2012)</u></b>	<u>Standard Test Method for Composition of Plumage</u>
<b><u>D6321 / D6321M - 14</u></b>	<u>Standard Practice for the Evaluation of Machine Washable T-Shirts</u>
<b><u>D6554 / D6554M - 14</u></b>	<u>Standard Specification for 100% Cotton Denim Fabrics</u>

Designation	Title
<b><u>D7017 - 14</u></b>	<u>Standard Performance Specification for Rainwear and All-Purpose, Water-Repellent Coat Fabrics</u>
<b><u>D7019 - 14</u></b>	<u>Standard Performance Specification for Brassiere, Slip, Lingerie and Underwear Fabrics</u>
<b><u>D7020 - 14</u></b>	<u>Standard Performance Specification for Woven Blouse, Dress, Dress Shirt &amp; Sport Shirt Fabrics</u>
<b><u>D7021 - 14</u></b>	<u>Standard Performance Specification for Bathrobe, Dressing Gown, Negligee, Nightgown, and Pajama Fabrics</u>
<b><u>D7022 - 13e1</u></b>	<u>Standard Terminology Relating to Apparel</u>
<b><u>D7268 - 14</u></b>	<u>Standard Performance Specification for Seamless Knit Garments Including Intimates and Swimwear</u>
<b><u>D7507 - 14</u></b>	<u>Standard Specification for Woven High Stretch Fabrics Used in Apparel</u>

## Body Measurement for Apparel Sizing

Designation	Title
<b><u>D4910 / D4910M - 08(2013)</u></b>	<u>Standard Tables of Body Measurements for Children, Infant Sizes—Premie to 24 Months</u>
<b><u>D5219 - 15</u></b>	<u>Standard Terminology Relating to Body Dimensions for Apparel Sizing</u>
<b><u>D5585 - 11e1</u></b>	<u>Standard Tables of Body Measurements for Adult Female Misses Figure Type, Size Range 00–20</u>
<b><u>D5586 / D5586M - 10</u></b>	<u>Standard Tables of Body Measurements for Women Aged 55 and Older (All Figure Types)</u>

Designation	Title
<b><u>D6192 - 11</u></b>	<u>Standard Tables of Body Measurements for Girls, Sizes 2 to 20 (Reg &amp; Slim) and Girls Plus</u>
<b><u>D6240 / D6240M - 12e1</u></b>	<u>Standard Tables of Body Measurements for Mature Men, ages 35 and older, Sizes Thirty-Four to Fifty-Two (34 to 52) Short, Regular, and Tall</u>
<b><u>D6458 - 12</u></b>	<u>Standard Tables of Body Measurements for Boys, Sizes 8 to 14 Slim and 8 to 20 Regular</u>
<b><u>D6829 - 02(2015)</u></b>	<u>Standard Tables of Body Measurements for Juniors, Sizes 0 to 19</u>
<b><u>D6860 / D6860M - 13</u></b>	<u>Standard Tables of Body Measurements for Boys, Sizes 4H to 20H Husky</u>
<b><u>D6960 / D6960M - 16e1</u></b>	<u>Standard Tables for Body Measurements for Plus Women's Figure Type, Size Range 14W – 40W</u>
<b><u>D7197 - 13</u></b>	<u>Standard Table of Body Measurements for Misses Maternity Sizes Two to Twenty-Two (2-22)</u>
<b><u>D7878 / D7878M - 13e1</u></b>	<u>Standard Tables for Body Measurements for Adult Female Misses Petite Figure Type, Size Range 00P – 20P</u>
<b><u>D8077 / D8077M - 16</u></b>	<u>Standard Tables for Body Measurements for Mature Big Men Type, Size Range 46 –64</u>

## Conditioning, Chemical and Thermal Properties

Designation	Title
<b><u>D276 - 12</u></b>	<u>Standard Test Methods for Identification of Fibers in Textiles</u>



Designation	Title
<b><u>D629 - 15</u></b>	<u>Standard Test Methods for Quantitative Analysis of Textiles</u>
<b><u>D1518 - 14</u></b>	<u>Standard Test Method for Thermal Resistance of Batting Systems Using a Hot Plate</u>
<b><u>D1776 / D1776M - 16</u></b>	<u>Standard Practice for Conditioning and Testing Textiles</u>
<b><u>D1909 - 13</u></b>	<u>Standard Tables of Commercial Moisture Regains and Commercial Allowances for Textile Fibers</u>
<b><u>D2257 - 98(2012)</u></b>	<u>Standard Test Method for Extractable Matter in Textiles</u>
<b><u>D4920 - 13</u></b>	<u>Standard Terminology Relating to Conditioning, Chemical, and Thermal Properties</u>
<b><u>D7138 - 16</u></b>	<u>Standard Test Method to Determine Melting Temperature of Synthetic Fibers</u>
<b><u>D7984 - 16</u></b>	<u>Standard Test Method for Measurement of Thermal Effusivity of Fabrics Using a Modified Transient Plane Source (MTPS) Instrument</u>

## Cotton Fibers

Designation	Title
<b><u>D1440 - 07(2012)</u></b>	<u>Standard Test Method for Length and Length Distribution of Cotton Fibers (Array Method)</u>
<b><u>D1441 - 12</u></b>	<u>Standard Practice for Sampling Cotton Fibers for Testing</u>
<b><u>D1442 - 06(2012)</u></b>	<u>Standard Test Method for Maturity of Cotton Fibers (Sodium Hydroxide Swelling and Polarized Light Procedures)</u>

Designation	Title
<u><b>D1445 / D1445M - 12</b></u>	<u>Standard Test Method for Breaking Strength and Elongation of Cotton Fibers (Flat Bundle Method)</u>
<u><b>D1447 - 07(2012)e1</b></u>	<u>Standard Test Method for Length and Length Uniformity of Cotton Fibers by Photoelectric Measurement</u>
<u><b>D1448 - 11</b></u>	<u>Standard Test Method for Micronaire Reading of Cotton Fibers</u>
<u><b>D1464 - 12</b></u>	<u>Standard Practice for Differential Dyeing Behavior of Cotton</u>
<u><b>D1684 - 07(2012)</b></u>	<u>Standard Practice for Lighting Cotton Classing Rooms for Color Grading</u>
<u><b>D2495 - 07(2012)</b></u>	<u>Standard Test Method for Moisture in Cotton by Oven-Drying</u>
<u><b>D2812 - 07(2012)</b></u>	<u>Standard Test Method for Non-Lint Content of Cotton</u>
<u><b>D3025 - 07(2012)</b></u>	<u>Standard Practice for Standardizing Cotton Fiber Test Results by Use of Calibration Cotton Standards</u>
<u><b>D5866 - 12</b></u>	<u>Standard Test Method for Neps in Cotton Fibers</u>
<u><b>D5867 - 12e1</b></u>	<u>Standard Test Methods for Measurement of Physical Properties of Raw Cotton by Cotton Classification Instruments</u>
<u><b>D7139 - 09(2013)e1</b></u>	<u>Standard Terminology for Cotton Fibers</u>
<u><b>D7410 - 07(2012)</b></u>	<u>Standard Practice for Qualification of Cotton Classification Instruments for Cotton Marketing</u>
<u><b>D7642 - 12</b></u>	<u>Standard Practice for Establishment of Calibration Cottons for Cotton Classification Instruments</u>

Designation	Title
<b><u>D7785 - 12</u></b>	<u>Standard Test Method for Water in Lint Cotton by Oven Evaporation Combined with Volumetric Karl Fischer Titration</u>

## Fabric Test Methods, General

Designation	Title
<b><u>D737 - 18</u></b>	<u>Standard Test Method for Air Permeability of Textile Fabrics</u>
<b><u>D1336 - 07(2015)</u></b>	<u>Standard Test Method for Distortion of Yarn in Woven Fabrics</u>
<b><u>D1777 - 96(2015)</u></b>	<u>Standard Test Method for Thickness of Textile Materials</u>
<b><u>D2594 - 04(2016)</u></b>	<u>Standard Test Method for Stretch Properties of Knitted Fabrics Having Low Power</u>
<b><u>D2724 - 07(2015)</u></b>	<u>Standard Test Methods for Bonded, Fused, and Laminated Apparel Fabrics</u>
<b><u>D3107 - 07(2015)</u></b>	<u>Standard Test Methods for Stretch Properties of Fabrics Woven from Stretch Yarns</u>
<b><u>D3786 / D3786M - 18</u></b>	<u>Standard Test Method for Bursting Strength of Textile Fabrics—Diaphragm Bursting Strength Tester Method</u>
<b><u>D3787 - 16</u></b>	<u>Standard Test Method for Bursting Strength of Textiles—Constant-Rate-of-Traversal (CRT) Ball Burst Test</u>
<b><u>D3883 - 04(2016)</u></b>	<u>Standard Test Method for Yarn Crimp and Yarn Take-up in Woven Fabrics</u>
<b><u>D3939 / D3939M - 13(2017)</u></b>	<u>Standard Test Method for Snagging Resistance of Fabrics (Mace)</u>

Designation	Title
<b><u>D3990 - 12(2016)</u></b>	<u>Standard Terminology Relating to Fabric Defects</u>
<b><u>D4685 / D4685M - 15</u></b>	<u>Standard Test Method for Pile Fabric Abrasion</u>
<b><u>D4772 - 14</u></b>	<u>Standard Test Method for Surface Water Absorption of Terry Fabrics (Water Flow)</u>
<b><u>D4850 - 13(2017)</u></b>	<u>Standard Terminology Relating to Fabrics and Fabric Test Methods</u>
<b><u>D4851 - 07(2015)</u></b>	<u>Standard Test Methods for Coated and Laminated Fabrics for Architectural Use</u>
<b><u>D4964 - 96(2016)</u></b>	<u>Standard Test Method for Tension and Elongation of Elastic Fabrics (Constant-Rate-of-Extension Type Tensile Testing Machine)</u>
<b><u>D5278 / D5278M - 09(2017)</u></b>	<u>Standard Test Method for Elongation of Narrow Elastic Fabrics (Static-Load Testing)</u>
<b><u>D5362 - 13</u></b>	<u>Standard Test Method for Snagging Resistance of Fabrics (Bean Bag)</u>
<b><u>D5430 - 13(2017)</u></b>	<u>Standard Test Methods for Visually Inspecting and Grading Fabrics</u>
<b><u>D6207 - 03(2015)</u></b>	<u>Standard Test Method for Dimensional Stability of Fabrics to Changes in Humidity and Temperature</u>
<b><u>D6614 - 07(2015)</u></b>	<u>Standard Test Method for Stretch Properties of Textile Fabrics – CRE Method</u>
<b><u>D6797 - 15</u></b>	<u>Standard Test Method for Bursting Strength of Fabrics Constant-Rate-of-Extension (CRE) Ball Burst Test</u>

## Fabric Test Methods, Specific

Designation

Title



Designation	Title
<b><u>D1388 - 14e1</u></b>	<u>Standard Test Method for Stiffness of Fabrics</u>
<b><u>D1424 - 09(2013)e1</u></b>	<u>Standard Test Method for Tearing Strength of Fabrics by Falling-Pendulum (Elmendorf-Type) Apparatus</u>
<b><u>D2261 - 13(2017)e1</u></b>	<u>Standard Test Method for Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure (Constant-Rate-of-Extension Tensile Testing Machine)</u>
<b><u>D3181 - 15e1</u></b>	<u>Standard Guide for Conducting Wear Tests on Textiles</u>
<b><u>D3511 / D3511M - 16</u></b>	<u>Standard Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Brush Pilling Tester</u>
<b><u>D3512 / D3512M - 16</u></b>	<u>Standard Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Random Tumble Pilling Tester</u>
<b><u>D3514 / D3514M - 16</u></b>	<u>Standard Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Elastomeric Pad</u>
<b><u>D3773 / D3773M - 10(2014)</u></b>	<u>Standard Test Methods for Length of Woven Fabric</u>
<b><u>D3774 - 96(2016)</u></b>	<u>Standard Test Method for Width of Textile Fabric</u>
<b><u>D3775 - 17e1</u></b>	<u>Standard Test Method for End (Warp) and Pick (Filling) Count of Woven Fabrics</u>
<b><u>D3776 / D3776M - 09a(2017)</u></b>	<u>Standard Test Methods for Mass Per Unit Area (Weight) of Fabric</u>

Designation	Title
<b><u>D3882 - 08(2016)e1</u></b>	<u>Standard Test Method for Bow and Skew in Woven and Knitted Fabrics</u>
<b><u>D3884 - 09(2017)</u></b>	<u>Standard Guide for Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)</u>
<b><u>D3885 - 07a(2015)</u></b>	<u>Standard Test Method for Abrasion Resistance of Textile Fabrics (Flexing and Abrasion Method)</u>
<b><u>D3886 - 99(2015)</u></b>	<u>Standard Test Method for Abrasion Resistance of Textile Fabrics (Inflated Diaphragm Apparatus)</u>
<b><u>D4032 - 08(2016)</u></b>	<u>Standard Test Method for Stiffness of Fabric by the Circular Bend Procedure</u>
<b><u>D4157 - 13(2017)</u></b>	<u>Standard Test Method for Abrasion Resistance of Textile Fabrics (Oscillatory Cylinder Method)</u>
<b><u>D4158 - 08(2016)</u></b>	<u>Standard Guide for Abrasion Resistance of Textile Fabrics (Uniform Abrasion)</u>
<b><u>D4966 - 12(2016)</u></b>	<u>Standard Test Method for Abrasion Resistance of Textile Fabrics (Martindale Abrasion Tester Method)</u>
<b><u>D4970 / D4970M - 16e3</u></b>	<u>Standard Test Method for Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Martindale Tester</u>
<b><u>D5034 - 09(2017)</u></b>	<u>Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test)</u>
<b><u>D5035 - 11(2015)</u></b>	<u>Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)</u>

Designation	Title
<b><u>D5587 - 15</u></b>	<u>Standard Test Method for Tearing Strength of Fabrics by Trapezoid Procedure</u>
<b><u>D6674 - 01(2017)</u></b>	<u>Standard Guide for Proficiency Test Program for Fabrics</u>
<b><u>D6770 - 07(2015)</u></b>	<u>Standard Test Method for Abrasion Resistance of Textile Webbing (Hex Bar Method)</u>
<b><u>D6775 - 13(2017)</u></b>	<u>Standard Test Method for Breaking Strength and Elongation of Textile Webbing, Tape and Braided Material</u>
<b><u>D6828 - 02(2015)</u></b>	<u>Standard Test Method for Stiffness of Fabric by Blade/Slot Procedure</u>
<b><u>D7811 - 13(2017)</u></b>	<u>Standard Test Method for Bow and Skew Using a Measuring Tool</u>
<b><u>D8007 - 15e1</u></b>	<u>Standard Test Method for Wale and Course Count of Weft Knitted Fabrics</u>

## Flammability

Designation	Title
<b><u>D1230 - 17</u></b>	<u>Standard Test Method for Flammability of Apparel Textiles</u>
<b><u>D4151 - 18</u></b>	<u>Standard Test Method for Flammability of Blankets</u>
<b><u>D5238 - 10</u></b>	<u>Standard Test Method for Smoldering Combustion Potential of Cotton-Based Batting</u>
<b><u>D6413 / D6413M - 15</u></b>	<u>Standard Test Method for Flame Resistance of Textiles (Vertical Test)</u>
<b><u>D6545 - 18</u></b>	<u>Standard Test Method for Flammability of Textiles Used in Children's Sleepwear</u>

Designation	Title
<b><u>D7016 / D7016M - 14</u></b>	<u>Standard Test Method to Evaluate Edge Binding Components Used in Mattresses After Exposure to An Open Flame</u>
<b><u>D7140 / D7140M - 13(2017)</u></b>	<u>Standard Test Method to Measure Heat Transfer Through Textile Thermal Barrier Materials</u>
<b><u>D7571 - 10(2014)e1</u></b>	<u>Standard Specification for Retained Sewn Seam Strength After Exposures to Hot Air and Open Flame</u>

## Flax and Linen

Designation	Title
<b><u>D6798 - 02(2013)e2</u></b>	<u>Standard Terminology Relating to Flax and Linen</u>
<b><u>D6961 / D6961M - 09(2015)e1</u></b>	<u>Standard Test Method for Color Measurement of Flax Fiber</u>
<b><u>D7025 - 09(2015)e1</u></b>	<u>Standard Test Method for Assessing Clean Flax Fiber Fineness</u>
<b><u>D7076 - 10(2015)e1</u></b>	<u>Standard Test Method for Measurement of Shives in Retted Flax</u>
<b><u>D7879 - 13</u></b>	<u>Standard Test Method for Determining Flax Fiber Widths Using Image Analysis</u>
<b><u>D8171 - 18</u></b>	<u>Standard Test Methods for Density Determination of Flax Fiber</u>

## Glass Fiber and its Products

Designation	Title
<b><u>D578 / D578M - 05(2011)e1</u></b>	<u>Standard Specification for Glass Fiber Strands</u>
<b><u>D579 / D579M - 15</u></b>	<u>Standard Specification for Greige Woven Glass Fabrics</u>



Designation	Title
<b><u>D580 / D580M - 15</u></b>	<u>Standard Specification for Greige Woven Glass Tapes and Webbing</u>
<b><u>D581 / D581M - 12</u></b>	<u>Standard Specification for Glass Fiber Greige Braided Tubular Sleeving</u>
<b><u>D3374 / D3374M - 14</u></b>	<u>Standard Specification for Vinyl-Coated Glass Yarns</u>
<b><u>D3656 / D3656M - 13</u></b>	<u>Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns</u>
<b><u>D4028 / D4028M - 13</u></b>	<u>Standard Specification for Solar Screening Woven from Vinyl-Coated Fiber Glass Yarn</u>
<b><u>D4029 / D4029M - 16</u></b>	<u>Standard Specification for Finished Woven Glass Fabrics</u>
<b><u>D4030 / D4030M - 15</u></b>	<u>Standard Specification for Glass Fiber Cord and Sewing Thread</u>
<b><u>D4389 / D4389M - 16</u></b>	<u>Standard Specification for Finished Glass Fabrics Woven From Rovings</u>
<b><u>D4912 / D4912M - 14</u></b>	<u>Standard Test Method for Fabric Stability of Vinyl-Coated Glass Yarn Insect Screening and Louver Cloth</u>
<b><u>D4963 / D4963M - 11</u></b>	<u>Standard Test Method for Ignition Loss of Glass Strands and Fabrics</u>
<b><u>D7018 / D7018M - 12</u></b>	<u>Standard Terminology Relating to Glass Fiber and Its Products</u>

## Home Furnishings

Designation	Title
<b><u>D3597 - 02(2013)</u></b>	<u>Standard Performance Specification for Woven Upholstery Fabrics—Plain, Tufted, or Flocked</u>

Designation	Title
<b><u>D4037 - 02(2013)</u></b>	<u>Standard Performance Specification for Woven, Knitted, or Flocked Bedspread Fabrics</u>
<b><u>D4111 - 12</u></b>	<u>Standard Performance Specification for Woven Napery and Tablecloth Fabrics: Household and Institutional</u>
<b><u>D4113 - 02(2013)</u></b>	<u>Standard Performance Specification for Woven Slipcover Fabrics</u>
<b><u>D4720 - 08(2013)</u></b>	<u>Standard Performance Specification for Soft Window Covering Fabrics for Household Use</u>
<b><u>D4721 - 12</u></b>	<u>Standard Practice for Evaluation of the Performance of Machine Washable and Drycleanable Bedcoverings and Accessories</u>
<b><u>D4769 - 12</u></b>	<u>Standard Specification for Woven and Warp Knitted Comforter Fabrics</u>
<b><u>D5378 - 12</u></b>	<u>Standard Performance Specification for Woven and Knitted Shower Curtains for Institutional and Household Use</u>
<b><u>D5431 - 08(2013)</u></b>	<u>Standard Performance Specification for Woven and Knitted Sheeting Products for Institutional and Household Use</u>
<b><u>D5432 - 12</u></b>	<u>Standard Performance Specification for Blanket Products for Institutional and Household Use</u>
<b><u>D5433 - 12</u></b>	<u>Standard Performance Specification for Towel Products for Institutional and Household Use</u>
<b><u>D6663 - 08(2013)</u></b>	<u>Standard Specification for Woven and Knitted Comforter and Accessory Products for Institutional and Household Use</u>

Designation	Title
<b><u>D7023 - 06(2012)</u></b>	<u>Standard Terminology Relating to Home Furnishings</u>

## Industrial Fibers and Metallic Reinforcements

Designation	Title
<b><u>D646 - 13</u></b>	<u>Standard Test Method for Mass Per Unit Area of Paper and Paperboard of Aramid Papers (Basis Weight)</u>
<b><u>D885 / D885M - 10A(2014)e1</u></b>	<u>Standard Test Methods for Tire Cords, Tire Cord Fabrics, and Industrial Filament Yarns Made from Manufactured Organic-Base Fibers</u>
<b><u>D1871 - 04(2014)</u></b>	<u>Standard Test Method for Adhesion Between Tire Bead Wire and Rubber</u>
<b><u>D2229 - 10(2014)</u></b>	<u>Standard Test Method for Adhesion Between Steel Tire Cords and Rubber</u>
<b><u>D2692 / D2692M - 15</u></b>	<u>Standard Test Method for Air Permeability of Tire Fabrics, Tire Cord Fabrics, Tire Cord, and Yarns</u>
<b><u>D2969 - 04(2014)</u></b>	<u>Standard Test Methods for Steel Tire Cords</u>
<b><u>D2970 / D2970M - 04(2014)</u></b>	<u>Standard Test Methods for Testing Tire Cords, Tire Cord Fabrics, and Industrial Yarns Made From Glass Filaments</u>
<b><u>D4776 / D4776M - 18</u></b>	<u>Standard Test Method for Adhesion of Tire Cords and Other Reinforcing Cords to Rubber Compounds by H-Test Procedure</u>
<b><u>D4974 - 04(2016)</u></b>	<u>Standard Test Method for Hot Air Thermal Shrinkage of Yarn and Cord Using a Thermal Shrinkage Oven</u>
<b><u>D4975 - 14</u></b>	<u>Standard Test Methods for Single-Filament Tire Bead Wire Made from Steel</u>

Designation	Title
<b><u>D5591 - 04(2016)</u></b>	<u>Standard Test Method for Thermal Shrinkage Force of Yarn and Cord With a Thermal Shrinkage Force Tester</u>
<b><u>D6320 / D6320M - 10(2014)</u></b>	<u>Standard Test Methods for Single Filament Hose Reinforcing Wire Made from Steel</u>
<b><u>D6477 - 13e1</u></b>	<u>Standard Terminology Relating to Tire Cord, Bead Wire, Hose Reinforcing Wire, and Fabrics</u>
<b><u>D6588 / D6588M - 11(2016)</u></b>	<u>Standard Test Method for Fatigue of Tire Cords (Disc Fatigue Test)</u>
<b><u>D6611 - 16</u></b>	<u>Standard Test Method for Wet and Dry Yarn-on-Yarn Abrasion Resistance</u>
<b><u>D7269 / D7269M - 17</u></b>	<u>Standard Test Methods for Tensile Testing of Aramid Yarns</u>
<b><u>D7744 / D7744M - 11</u></b>	<u>Standard Test Methods for Tensile Testing of High Performance Polyethylene Tapes</u>
<b><u>D7812 - 16</u></b>	<u>Standard Test Method for Tensile Testing of Aramid Paper</u>
<b><u>D8054 / D8054M - 16</u></b>	<u>Standard Test Methods for Tensile Testing of Para-Aramid Flat Yarns</u>

## Inflatable Restraints

Designation	Title
<b><u>D5426 - 12(2017)</u></b>	<u>Standard Practices for Visual Inspection and Grading of Fabrics Used for Inflatable Restraints</u>
<b><u>D5427 - 09(2014)</u></b>	<u>Standard Practice for Accelerated Aging of Inflatable Restraint Fabrics</u>
<b><u>D5428 - 08(2013)</u></b>	<u>Standard Practice for Evaluating the Performance of Inflatable Restraint Modules</u>

Designation	Title
<b><u>D5446 - 08(2013)</u></b>	<u>Standard Practice for Determining Physical Properties of Fabrics, Yarns, and Sewing Thread Used in Inflatable Restraints</u>
<b><u>D5807 - 08(2013)</u></b>	<u>Standard Practice for Evaluating the Overpressurization Characteristics of Inflatable Restraint Cushions</u>
<b><u>D5822 - 13</u></b>	<u>Standard Test Method for Determining Seam Strength in Inflatable Restraint Cushions</u>
<b><u>D6476 - 12(2017)</u></b>	<u>Standard Test Method for Determining Dynamic Air Permeability of Inflatable Restraint Fabrics</u>
<b><u>D6478 - 10(2014)</u></b>	<u>Standard Test Method for Determining Specific Packability of Fabrics Used in Inflatable Restraints</u>
<b><u>D6479 - 15</u></b>	<u>Standard Test Method for Determining the Edgcomb Resistance of Woven Fabrics Used in Inflatable Restraints</u>
<b><u>D6613 - 08(2013)</u></b>	<u>Standard Practice for Determining the Presence of Sizing in Nylon or Polyester Fabric</u>
<b><u>D6799 - 13</u></b>	<u>Standard Terminology Relating to Inflatable Restraints</u>
<b><u>D7559 / D7559M - 09(2014)</u></b>	<u>Standard Test Method for Determining Pressure Decay of Inflatable Restraint Cushions</u>

## Labeling

Designation	Title
<b><u>D3136 - 14e1</u></b>	<u>Standard Terminology Relating to Care Labeling for Apparel, Textile, Home Furnishing, and Leather Products</u>



Designation	Title
<b><u>D3938 - 18</u></b>	<u>Standard Guide for Determining or Confirming Care Instructions for Apparel and Other Textile Products</u>
<b><u>D5253 - 04(2016)</u></b>	<u>Standard Terminology Relating to Floor Coverings and Textile Upholstered Furniture</u>
<b><u>D5489 - 18</u></b>	<u>Standard Guide for Care Symbols for Care Instructions on Textile Products</u>
<b><u>D6322 - 15</u></b>	<u>Standard Guide to International Test Methods Associated with Textile Care Procedures</u>

## Pile Floor Coverings

Designation	Title
<b><u>D1335 - 17e1</u></b>	<u>Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings</u>
<b><u>D2646 - 18</u></b>	<u>Standard Guide for Backing Fabric Characteristics of Pile Yarn Floor Coverings</u>
<b><u>D3936 - 17</u></b>	<u>Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering</u>
<b><u>D5252 - 15</u></b>	<u>Standard Practice for the Operation of the Hexapod Tumble Drum Tester</u>
<b><u>D5417 - 16</u></b>	<u>Standard Practice for Operation of the Vettermann Drum Tester</u>
<b><u>D5684 - 12</u></b>	<u>Standard Terminology Relating to Pile Floor Coverings</u>
<b><u>D5793 - 18</u></b>	<u>Standard Test Method for Binding Sites per Unit Length or Width of Pile Yarn Floor Coverings</u>

Designation	Title
<u><b>D5823 - 13</b></u>	<u>Standard Test Method for Tuft Height of Pile Floor Coverings</u>
<u><b>D5848 - 10e1</b></u>	<u>Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Coverings</u>
<u><b>D6119 - 12</b></u>	<u>Standard Practice for Creating Surface Appearance Changes in Pile Yarn Floor Covering from Foot Traffic</u>
<u><b>D6283 - 12</b></u>	<u>Standard Test Method for Tuft Element Length of Uncoated Pile Yarn Floor Coverings</u>
<u><b>D6540 - 17</b></u>	<u>Standard Test Method for Accelerated Soiling of Pile Yarn Floor Covering</u>
<u><b>D6719 - 12</b></u>	<u>Standard Guide for Standard Test Methods and Practices for Evaluating Pile Yarn Floor Covering</u>
<u><b>D6859 - 11</b></u>	<u>Standard Test Method for Pile Thickness of Finished Level Pile Yarn Floor Coverings</u>
<u><b>D6962 - 17</b></u>	<u>Standard Practice for Operation of a Roller Chair Tester for Pile Yarn Floor Coverings</u>
<u><b>D7241 - 13</b></u>	<u>Standard Test Method for Pile Thickness of Finished Multilevel Pile Yarn Floor Covering</u>
<u><b>D7267 - 13</b></u>	<u>Standard Test Method for Edge Ravel Resistance of Finished Loop Pile, Pile Yarn Floor Covering</u>
<u><b>D7330 - 15</b></u>	<u>Standard Test Method for Assessment of Surface Appearance Change in Pile Floor Coverings Using Standard Reference Scales</u>
<u><b>D7570 - 17</b></u>	<u>Standard Test Method for Evaluation of Dimensional Stability of Pile Yarn Floor Covering</u>

Designation	Title
<b><u>D7983 - 17</u></b>	<u>Standard Test Method for Shrinkage of Carpet Backing Fabrics</u>

## Sewn Product Automation

Designation	Title
<b><u>D6673 - 10</u></b>	<u>Standard Practice for Sewn Products Pattern Data Interchange-Data Format</u>
<b><u>D6963 - 13</u></b>	<u>Standard Terminology Relating to Sewn Products Automation</u>
<b><u>D7331 - 11</u></b>	<u>Standard Practice for Sewn Products Marker Data Interchange</u>

## Subassemblies

Designation	Title
<b><u>D1683 / D1683M - 17(2018)</u></b>	<u>Standard Test Method for Failure in Sewn Seams of Woven Fabrics</u>
<b><u>D2050 - 11e1</u></b>	<u>Standard Terminology Relating to Fasteners and Closures Used with Textiles</u>
<b><u>D2051 - 14</u></b>	<u>Standard Test Method for Durability of Finish of Zippers to Laundering</u>
<b><u>D2052 - 05(2015)</u></b>	<u>Standard Test Method for Colorfastness of Zippers to Drycleaning</u>
<b><u>D2053 - 99(2015)</u></b>	<u>Standard Test Method for Colorfastness of Zippers to Light</u>
<b><u>D2054 - 99(2015)</u></b>	<u>Standard Test Method for Colorfastness of Zipper Tapes to Crocking</u>
<b><u>D2057 - 05(2015)</u></b>	<u>Standard Test Method for Colorfastness of Zippers to Laundering</u>
<b><u>D2058 - 03(2014)</u></b>	<u>Standard Test Method for Durability of Finish of Zippers to Drycleaning</u>

Designation	Title
<b><u>D2059 / D2059M - 03(2014)</u></b>	<u>Standard Test Method for Resistance of Zippers to Salt Spray (Fog)</u>
<b><u>D2060 - 14e1</u></b>	<u>Standard Test Methods for Measuring Zipper Dimensions</u>
<b><u>D2061 - 07(2013)</u></b>	<u>Standard Test Methods for Strength Tests for Zippers</u>
<b><u>D2062 - 03(2014)</u></b>	<u>Standard Test Methods for Operability of Zippers</u>
<b><u>D3657 - 03(2014)</u></b>	<u>Standard Specification for Zipper Dimensions</u>
<b><u>D3692 - 89(2016)</u></b>	<u>Standard Practice for Selection of Zippers for Care-Labeled Apparel and Household Furnishings</u>
<b><u>D4465 - 05(2015)</u></b>	<u>Standard Performance Specification for Zippers for Dungarees, Jeans and Work Trousers</u>
<b><u>D4846 - 96(2016)</u></b>	<u>Standard Test Method for Resistance to Unsnapping of Snap Fasteners</u>
<b><u>D5169 - 98(2015)</u></b>	<u>Standard Test Method for Shear Strength (Dynamic Method) of Hook and Loop Touch Fasteners</u>
<b><u>D5170 - 98(2015)</u></b>	<u>Standard Test Method for Peel Strength ("T" Method) of Hook and Loop Touch Fasteners</u>
<b><u>D5171 - 15</u></b>	<u>Standard Test Method for Impact Resistance of Plastic Sew-Through Buttons</u>
<b><u>D5646 - 13</u></b>	<u>Standard Terminology Relating to Seams and Stitches Used in Home Sewing</u>
<b><u>D6193 - 16</u></b>	<u>Standard Practice for Stitches and Seams</u>
<b><u>D6644 - 01(2013)</u></b>	<u>Standard Test Method for Tension Strength of Sew-Through Flange Buttons</u>

Designation	Title
<b><u>D6840 - 02(2013)</u></b>	<u>Standard Test Method for Effect of Drycleaning on Buttons</u>
<b><u>D7142 - 05(2016)</u></b>	<u>Standard Test Method for Holding Strength of Prong-Ring Attached Snap Fasteners</u>
<b><u>D7506 / D7506M - 17</u></b>	<u>Standard Test Method for Pocket Reinforcement</u>
<b><u>D7722 - 17</u></b>	<u>Standard Terminology Relating to Industrial Textile Stitches and Seams</u>
<b><u>D7842 / D7842M - 12(2016)</u></b>	<u>Standard Test Method for Holding Strength of Tack and Prong Fastener Attached Buttons</u>

## Sustainability of Textiles

Designation	Title
<b><u>D7841 - 13</u></b>	<u>Standard Practice for Sustainable Laundry Best Management Practices</u>

## Terminology

Designation	Title
<b><u>D123 - 17</u></b>	<u>Standard Terminology Relating to Textiles</u>
<b><u>D4391 - 18</u></b>	<u>Standard Terminology Relating to The Burning Behavior of Textiles</u>
<b><u>D7641 - 10(2014)e1</u></b>	<u>Standard Guide for Textile Fibers</u>

## UV Protective Fabrics and Clothing

Designation	Title
<b><u>D6544 - 12</u></b>	<u>Standard Practice for Preparation of Textiles Prior to Ultraviolet (UV) Transmission Testing</u>



Designation	Title
<b><u>D6603 - 12</u></b>	<u>Standard Specification for Labeling of UV-Protective Textiles</u>
<b>Wool and Felt</b>	
Designation	Title
<b><u>D519 - 04(2013)</u></b>	<u>Standard Test Method for Length of Fiber in Wool Top</u>
<b><u>D584 - 10</u></b>	<u>Standard Test Method for Wool Content of Raw Wool-Laboratory Scale</u>
<b><u>D1060 - 10</u></b>	<u>Standard Practice for Core Sampling of Raw Wool in Packages for Determination of Percentage of Clean Wool Fiber Present</u>
<b><u>D1113 - 13</u></b>	<u>Standard Test Method for Vegetable Matter and Other Alkali-Insoluble Impurities in Scoured Wool</u>
<b><u>D1234 - 13</u></b>	<u>Standard Test Method of Sampling and Testing Staple Length of Grease Wool</u>
<b><u>D1283 - 05(2013)</u></b>	<u>Standard Test Method for Alkali-Solubility of Wools</u>
<b><u>D1294 - 05(2013)</u></b>	<u>Standard Test Method for Tensile Strength and Breaking Tenacity of Wool Fiber Bundles 1-in. (25.4-mm) Gage Length</u>
<b><u>D1574 - 04(2013)</u></b>	<u>Standard Test Method for Extractable Matter in Wool and Other Animal Fibers</u>
<b><u>D1575 - 13</u></b>	<u>Standard Test Method for Fiber Length of Wool in Scoured Wool and in Card Sliver</u>
<b><u>D1576 - 13</u></b>	<u>Standard Test Method for Moisture in Wool by Oven-Drying</u>
<b><u>D1770 - 94(2012)e1</u></b>	<u>Standard Test Method for Neps, Vegetable Matter, and Colored Fiber in Wool Top</u>

Designation	Title
<u><b>D2130 - 13</b></u>	<u>Standard Test Method for Diameter of Wool and Other Animal Fibers by Microprojection</u>
<u><b>D2165 - 94(2012)e1</b></u>	<u>Standard Test Method for pH of Aqueous Extracts of Wool and Similar Animal Fibers</u>
<u><b>D2462 - 13</b></u>	<u>Standard Test Method for Moisture in Wool by Distillation With Toluene</u>
<u><b>D2475 - 01(2013)</b></u>	<u>Standard Specification for Felt</u>
<u><b>D2524 - 13</b></u>	<u>Standard Test Method for Breaking Tenacity of Wool Fibers, Flat Bundle Method— 18-in. (3.2-mm) Gage Length</u>
<u><b>D2525 - 13</b></u>	<u>Standard Practice for Sampling Wool for Moisture</u>
<u><b>D2720 - 94(2012)e1</b></u>	<u>Standard Practice for Calculation of Commercial Weight and Yield of Scoured Wool, Top, and Noil for Various Commercial Compositions</u>
<u><b>D2968 - 13</b></u>	<u>Standard Test Method for Med and Kemp Fibers in Wool and Other Animal Fibers by Microprojection</u>
<u><b>D3991 - 94(2012)e1</b></u>	<u>Standard Specifications for Fineness of Wool or Mohair and Assignment of Grade</u>
<u><b>D3992 - 94(2012)e1</b></u>	<u>Standard Specifications for Fineness of Wool Top or Mohair Top and Assignment of Grade</u>
<u><b>D4845 - 10e2</b></u>	<u>Standard Terminology Relating to Wool</u>
<u><b>D6466 - 10</b></u>	<u>Standard Test Method for Diameter of Wool and Other Animal Fibers By Sirolan-Laserscan Fiber Diameter Analyser</u>
<u><b>D6500 - 00(2012)e1</b></u>	<u>Standard Test Method for Diameter of Wool and Other Animal Fibers Using an Optical Fiber Diameter Analyser</u>

## Yarns and Fibers

Designation	Title
<b><u>D76 / D76M - 11(2016)</u></b>	<u>Standard Specification for Tensile Testing Machines for Textiles</u>
<b><u>D204 - 02(2016)</u></b>	<u>Standard Test Methods for Sewing Threads</u>
<b><u>D861 - 07(2013)</u></b>	<u>Standard Practice for Use of the Text System to Designate Linear Density of Fibers, Yarn Intermediates, and Yarns</u>
<b><u>D1059 - 17</u></b>	<u>Standard Test Method for Yarn Number Based on Short-Length Specimens</u>
<b><u>D1244 - 98(2011)</u></b>	<u>Standard Practice for Designation of Yarn Construction</u>
<b><u>D1422 / D1422M - 13</u></b>	<u>Standard Test Method for Twist in Single Spun Yarns by the Untwist-Retwist Method</u>
<b><u>D1423 / D1423M - 16</u></b>	<u>Standard Test Method for Twist in Yarns by Direct-Counting</u>
<b><u>D1425 / D1425M - 14</u></b>	<u>Standard Test Method for Evenness of Textile Strands Using Capacitance Testing Equipment</u>
<b><u>D1577 - 07(2012)</u></b>	<u>Standard Test Methods for Linear Density of Textile Fibers</u>
<b><u>D1578 - 93(2016)</u></b>	<u>Standard Test Method for Breaking Strength of Yarn in Skein Form</u>
<b><u>D1907 / D1907M - 12</u></b>	<u>Standard Test Method for Linear Density of Yarn (Yarn Number) by the Skein Method</u>
<b><u>D2102 - 02(2012)e1</u></b>	<u>Standard Test Method for Shrinkage of Textile Fibers (Bundle Test)</u>
<b><u>D2255 / D2255M - 09(2013)e1</u></b>	<u>Standard Test Method for Grading Spun Yarns for Appearance</u>

Designation	Title
<b><u>D2256 / D2256M - 10(2015)</u></b>	<u>Standard Test Method for Tensile Properties of Yarns by the Single-Strand Method</u>
<b><u>D2258 / D2258M - 16</u></b>	<u>Standard Practice for Sampling Yarn for Testing</u>
<b><u>D2259 - 02(2016)</u></b>	<u>Standard Test Method for Shrinkage of Yarns</u>
<b><u>D2260 - 03(2013)</u></b>	<u>Standard Tables of Conversion Factors and Equivalent Yarn Numbers Measured in Various Numbering Systems</u>
<b><u>D2402 - 07(2012)</u></b>	<u>Standard Test Method for Water Retention of Textile Fibers (Centrifuge Procedure)</u>
<b><u>D2494 - 13</u></b>	<u>Standard Test Method for Commercial Mass of a Shipment of Yarn or Manufactured Staple Fiber or Tow</u>
<b><u>D2497 - 07(2012)</u></b>	<u>Standard Tolerances for Manufactured Organic-Base Filament Single Yarns</u>
<b><u>D2591 - 07(2013)</u></b>	<u>Standard Test Method for Linear Density of Elastomeric Yarns (Short Length Specimens)</u>
<b><u>D2612 - 99(2011)</u></b>	<u>Standard Test Method for Fiber Cohesion in Sliver and Top (Static Tests)</u>
<b><u>D2644 - 12</u></b>	<u>Standard Tolerances for Yarns Spun on the Woolen System</u>
<b><u>D2645 - 07(2012)</u></b>	<u>Standard Tolerances for Yarns Spun on the Cotton or Worsted Systems</u>
<b><u>D2653 - 07(2012)</u></b>	<u>Standard Test Method for Tensile Properties of Elastomeric Yarns (CRE Type Tensile Testing Machines)</u>
<b><u>D2731 - 15</u></b>	<u>Standard Test Method for Elastic Properties of Elastomeric Yarns (CRE Type Tensile Testing Machines)</u>

Designation	Title
<u><b>D3106 - 07(2012)</b></u>	<u>Standard Test Method for Permanent Deformation of Elastomeric Yarns</u>
<u><b>D3108 / D3108M - 13</b></u>	<u>Standard Test Method for Coefficient of Friction, Yarn to Solid Material</u>
<u><b>D3217 / D3217M - 15</b></u>	<u>Standard Test Methods for Breaking Tenacity of Manufactured Textile Fibers in Loop or Knot Configurations</u>
<u><b>D3218 - 07(2012)</b></u>	<u>Standard Specification for Polyolefin Monofilaments</u>
<u><b>D3333 - 07(2012)</b></u>	<u>Standard Practice for Sampling Manufactured Staple Fibers, Sliver, or Tow for Testing</u>
<u><b>D3412 / D3412M - 13</b></u>	<u>Standard Test Method for Coefficient of Friction, Yarn to Yarn</u>
<u><b>D3513 - 02(2012)</b></u>	<u>Standard Test Method for Overlength Fiber Content of Manufactured Staple Fiber</u>
<u><b>D3693 - 02(2016)</b></u>	<u>Standard Specification for Labeled Length per Holder of Sewing Thread</u>
<u><b>D3822 / D3822M - 14</b></u>	<u>Standard Test Method for Tensile Properties of Single Textile Fibers</u>
<u><b>D3823 - 07(2012)</b></u>	<u>Standard Practice for Determining Ticket Numbers for Sewing Threads</u>
<u><b>D3888 - 15</b></u>	<u>Standard Terminology for Yarn Spinning Systems</u>
<u><b>D3937 - 12</b></u>	<u>Standard Test Method for Crimp Frequency of Manufactured Staple Fibers</u>
<u><b>D4031 - 07(2012)</b></u>	<u>Standard Test Method for Bulk Properties of Textured Yarns</u>
<u><b>D4120 - 07(2012)</b></u>	<u>Standard Test Method for Fiber Cohesion in Roving, Sliver, and Top in Dynamic Tests</u>



Designation	Title
<u><b>D4466 - 02(2012)</b></u>	<u>Standard Terminology Related to Multicomponent Textile Fibers</u>
<u><b>D4724 - 11</b></u>	<u>Standard Test Method for Entanglements in Untwisted Filament Yarns by Needle Insertion</u>
<u><b>D4848 - 98(2012)</b></u>	<u>Standard Terminology Related to Force, Deformation and Related Properties of Textiles</u>
<u><b>D4849 - 13e3</b></u>	<u>Standard Terminology Related to Yarns and Fibers</u>
<u><b>D5103 - 07(2012)</b></u>	<u>Standard Test Method for Length and Length Distribution of Manufactured Staple Fibers (Single-Fiber Test)</u>
<u><b>D5344 - 99(2017)</b></u>	<u>Standard Test Method for Extension Force of Partially Oriented Yarn</u>
<u><b>D5647 - 07(2012)</b></u>	<u>Standard Guide for Measuring Hairiness of Yarns by the Photo-Electric Apparatus</u>
<u><b>D6197 - 99(2017)</b></u>	<u>Standard Test Method for Classifying and Counting Faults in Spun Yarns in Electronic Tests</u>
<u><b>D6587 - 12e1</b></u>	<u>Standard Test Method for Yarn Number Using Automatic Tester</u>
<u><b>D6612 - 00(2016)</b></u>	<u>Standard Test Method for Yarn Number and Yarn Number Variability Using Automated Tester</u>
<u><b>D6717 - 07(2012)</b></u>	<u>Standard Test Method for Linear Density of Elastomeric Yarns (Skein Specimens)</u>
<u><b>D6720 - 07(2012)</b></u>	<u>Standard Test Method for Evaluation of Recoverable Stretch of Stretch Yarns (Skein Method)</u>

Designation	Title
<b><u>D6774 - 02(2010)</u></b>	<u>Standard Test Method for Crimp and Shrinkage Properties for Textured Yarns Using a Dynamic Textured Yarn Tester</u>
<b><u>D7508 / D7508M - 10(2015)</u></b>	<u>Standard Specification for Polyolefin Chopped Strands for Use in Concrete</u>

## Other standards developed by ASTM committees:

3D Imaging Standards

Additive Manufacturing Standards

Adhesive Standards

Aerospace Material Standards

Analytical Chemistry Standards

Asset Management Standards

Atmospheric Analysis Standards

Biotechnology Standards

### **Construction Standards**

Adhesive Standards

Building Standards

Cement Standards and Concrete Standards

Fire Standards and Flammability Standards

Geotechnical Engineering Standards

Masonry Standards

Road Standards and Paving Standards

Roofing Standards

Thermal Insulation Standards

Wood Standards

Business Copy Product Standards

Carbon Standards

Catalyst Standards

Cement Standards and Concrete Standards

Coal Standards and Gas Standards

Composite Standards

Computerized System Standards

Consumer Product Evaluation Standards

Copper Standards

Corrosion Standards and Wear Standards

Durability of Nonmetallic Material Standards

Electrical Insulating Material Standards

Electrical Standards and Magnetic Conductor Standards

Electronics Standards

**Environmental Standards**

Atmospheric Analysis Standards

Environmental Assessment Standards and Risk Management Standards

Environmental Toxicology Standards

Waste Management Standards

Water Testing Standards

Fastener Standards

Fatigue Standards and Fracture Standards

Fire Standards and Flammability Standards

Forensic Science Standards

Geotechnical Engineering Standards

Glass Standards and Ceramic Standards

Industrial Chemical Standards

Industrial Hygiene Standards and Safety Standards

Laboratory Testing Standards

Leather Standards

Masonry Standards

Medical Device Standards and Implant Standards

Medical Service Standards and Medical Equipment Standards

**Metals Standards**

Analytical Chemistry Standards

Cast Iron Standards

Copper Standards

Corrosion Standards and Wear Standards

Fastener Standards

Fatigue Standards and Fracture Standards

Metallic Coating Standards

Nonferrous Metal Standards and Nonferrous Alloy Standards

Steel Standards

Molecular Spectroscopy Standards and Separation Science Standards

Nanotechnology Standards

Nondestructive Testing Standards

Nuclear Technology Standards

Oxygen Enriched Atmospheres Standards

**Paint Standards and Related Coating Standards**

Paper Standards and Packaging Standards

**Petroleum Standards**

Pharmaceutical Application Standards

Physical Measurement Standards

Physical Testing Standards and Mechanical Testing Standards

Plastic Pipe Standards

**Plastics Standards**

Quality Control Standards

Refractory Standards

Resilient Floor Covering Standards

Road Standards and Paving Standards

Rolling Element Bearing Standards

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