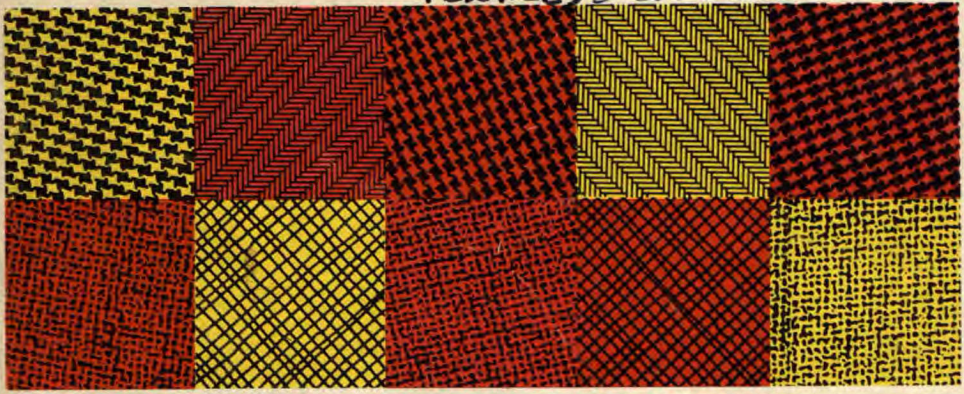


TEXTILES Connected



# FIBRES & FABRICS

Consumer Research Report No.7



Consumer and  
Corporate Affairs

Consommation et  
Corporations



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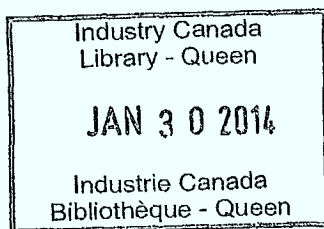
Information Canada  
Ottawa, 1975

Cat. No.: RG31-7/1975

Imprimerie Jacques-Cartier Inc.  
Contract No.: 09KX-5446-4-4142

# **FIBRES AND FABRICS**

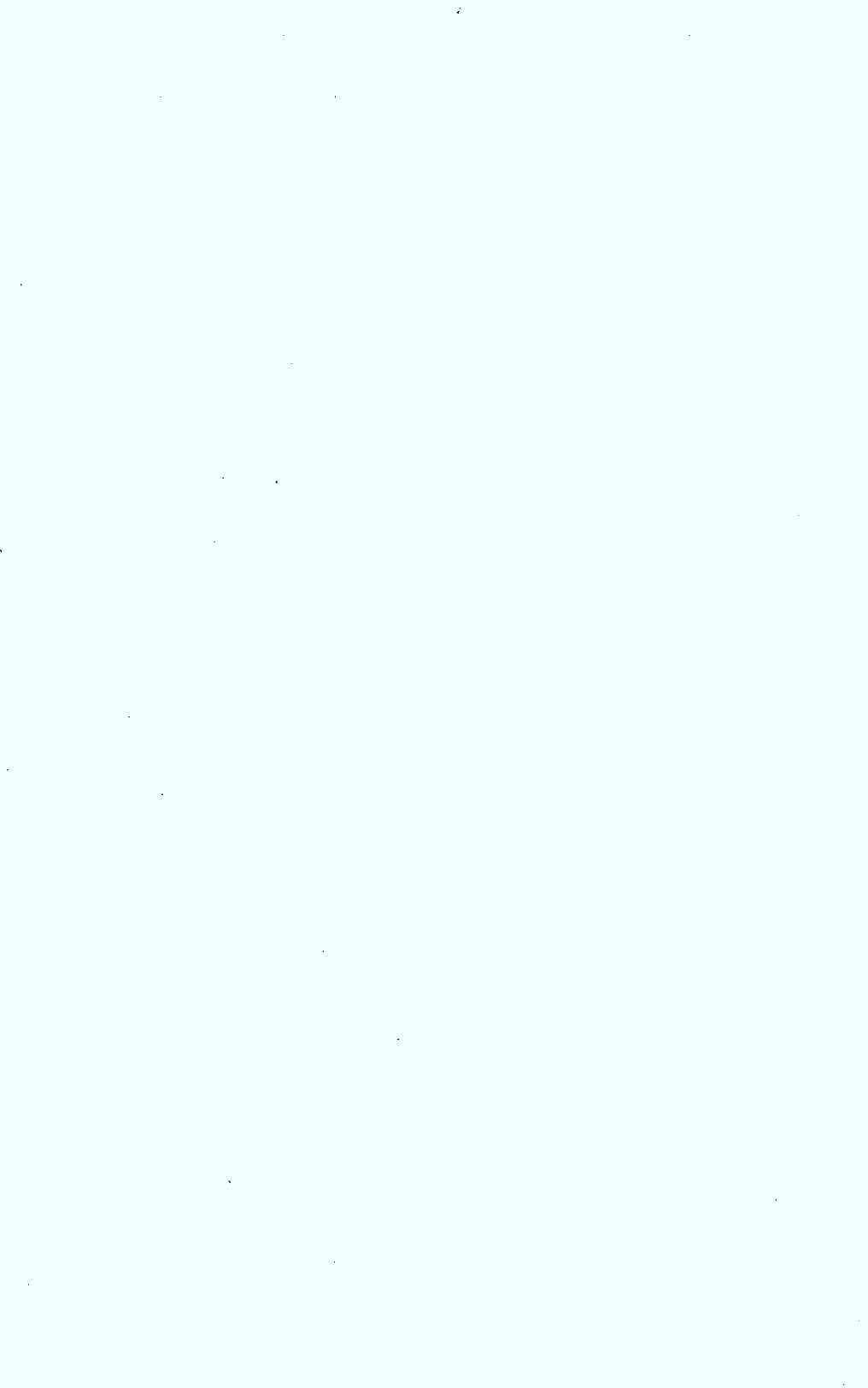
**CONSUMER RESEARCH REPORT No. 7**



**Consumer and  
Corporate Affairs**

**Consommation et  
Corporations**

**THE HON. ANDRÉ OUELLET, MINISTER**



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## INTRODUCTION

Consumers in the marketplace of the 1970's cannot help but see the impact that textiles, both old and new, have on the life styles of Canadians.

Textiles offer us an infinite range of colour, variety and serviceability. They provide pleasure, comfort and decoration, and it is small wonder that choices are sometimes difficult.

This booklet is designed to help consumers who are confused by the choices available to them. It describes the properties, methods of care and major uses of those textile fibres which are offered for sale to the Canadian consumer. It also describes an informative Care Labelling scheme which has been developed, and contains some basic information on fabric construction.

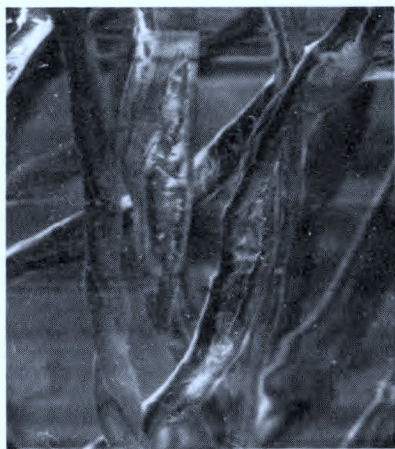
The Canadian Government recently passed legislation which requires that the fibre content of all consumer textile products sold in Canada be identified. The Textile Labelling Act became effective December 1, 1972. Although trade marks are still permitted, they must be accompanied by the generic or family name of the fibre. The family names used in this booklet are those prescribed by law and are those which will be found on the textile articles.

Some trade names and brand names have been included to help identify fibres by relating their generic name to more familiar trade names. The list of trade marks and brand names is far from complete. There are many hundreds of them which have not been included in this booklet.

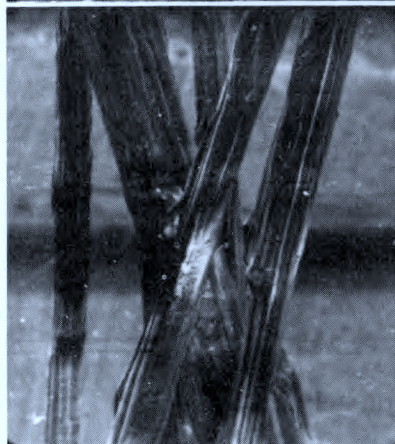
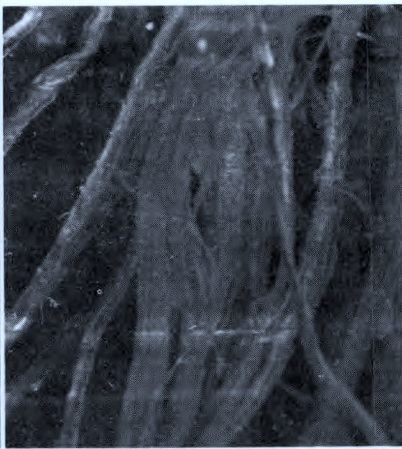
All of the fibres listed, whether natural or man-made, have advantages and limitations. By learning something about the properties, methods of care and uses of these fibre families, consumers will be better able to choose wisely and to care for fabrics, apparel, furnishings and other textile products.

# THE NATURAL FIBRES

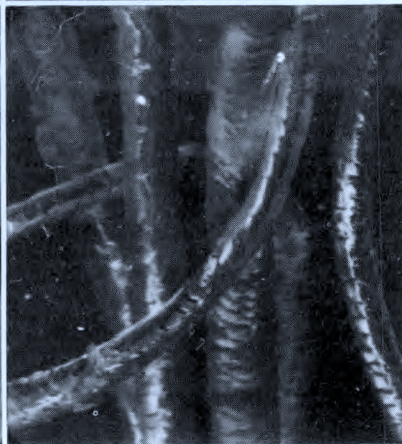
**COTTON**



**LINEN**



**SILK**



**WOOL**

## COTTON

Cotton is a natural cellulose fibre gathered from the seed pod of cotton plants. The quality of cotton is dependent on fibre length, fineness, colour and lustre. Long fibres produce better quality fabrics because they can be spun into fine, smooth, lustrous, and comparatively strong yarns. Sea Island, Egyptian Sakel and Pima are among the best cottons. Short fibres produce coarser yarns which can be made into fabrics that are durable but less smooth and lustrous.

Cotton is still the most used of all fibres. It is used alone or in blends in a wide variety of apparel, household and industrial products. Cotton fabrics are receptive to many chemical and resin finishes which impart wash-and-wear properties and resistance to wrinkling, fire and water.

## COTTON

### Properties

absorbency	}	good to excellent
colourfastness		
dyability		
resistance to: heat		
moths		
perspiration	}	fair to poor (unless treated)
softness		
strength, wet or dry		
dimensional stability	}	fair to poor (unless treated)
pressed-in crease retention		
resistance to: mildew		
sunlight		
wrinkling		
wash-and-wear quality	}	

Cotton ignites readily and is not self-extinguishing. It can be treated and made flame resistant.

Effect of heat: yellows slowly at 245°F (120°C).

Resin finishes may impart such qualities as dimensional stability, crease retention and wrinkle resistance.

### Care

Cotton can be:

machine washed.

tumble dried.

dry-cleaned.

bleached with chlorine or peroxide bleaches. Excessive use of chlorine bleaches may weaken the fibre.

ironed — a safe ironing temperature is 400°F. (200°C.).

Consult labels for treatment when special finishes are present.

Cotton fabrics should be pre-shrunk for home sewing.

### **Uses**

all types of apparel

rugs and mats

home furnishings

household textile products

    sheets

    towels

    etc.

canvas

industrial uses

## LINEN

Linen is the fabric woven from the strong, lustrous fibre of the flax plant.

As with cotton, the quality of linen is dependent on the fibre length and fineness, the degree of bleaching if white, and the fastness of the dyes if coloured.

Linen is rather more expensive than cotton because of its limited production and the hand labour necessary to process it. It is a cool and highly absorbent fabric which for many years was used extensively in comfortable but extremely rumpled summer suits.

There is some confusion in the marketplace because of the use of terms such as silk-linen, linen-finish, etc. A purchaser should refer to labels and hang tags attached to the articles in order to determine if the fabrics are made of pure linen, are blends of linen with other fibres, or are made of a fibre superficially resembling linen.

## LINEN

### Properties

absorbency	}	good to excellent
colourfastness		
dimensional stability		
durability		
laundryability		
resistance to: heat		
moths	}	fair to poor
perspiration		
pressed-in crease retention		
resistance to: mildew		
sunlight		
wrinkling		

Linen ignites readily and is not self-extinguishing. It can be treated to make it somewhat flame resistant, however, the treatment tends to make the fabric less durable.

Linen does not lint. It is weakened and may crack by pressing along folds and creases.

### Care

Linen can be:

machine washed and tumble dried.

dry-cleaned.

bleached if white (over-bleaching will weaken the fibre).

ironed, with best results when damp. A safe ironing temperature is 400°F (200°C).

Lustre can be increased by ironing on the right side of fabric when it is damp. Creases should not be pressed in.

## **Uses**

warm weather apparel

handkerchiefs

home furnishings

dish towels

table linens

## SILK

Silk is nature's own continuous filament fibre. It is produced by the silk worm as a wrapping to protect itself as it changes from caterpillar to moth. The cocoons are soaked in warm water to soften the gum that binds the cocoon together. The silk fibre then is carefully unwound in a continuous filament 400 to 1200 metres long. A subsequent treatment may be used to partially or completely remove the gum. "Raw" silk has not passed through the gum removal process. Used alone, the word "silk" refers to a fibre obtained from carefully cultivated silkworms fed on mulberry leaves. "Tussah" or "wild" silk comes from uncultivated silk worms which may feed on oak or cherry leaves instead of mulberry. The resulting fibres are tan in colour and cannot be bleached. These fibres are also coarser and more uneven than cultivated silk, and the fabrics produced from them are textured and uneven. Occasionally two cocoons accidentally grow together, and sometimes cocoons are deliberately placed so they will grow together. The resulting fibre filaments are joined at intervals, thus producing a thick-and-thin yarn known as "doupioni" silk. This silk is used to advantage in making certain textured silk fabrics of which silk shantung is an example. The short fibres from broken or defective cocoons are known as silk nail or waste silk. They are spun into yarns by a method similar to that used for cotton and the yarns may also be called silk nail, or waste silk, or spun silk.

"Silk", "pure silk", "all silk" or "pure dye silk" must contain no metallic weightings and no more than 10 percent by weight of dyes or finishing materials (black silk 15 percent).

Weighted silk contains metallic salts-usually tin salts. Weighted silks are less expensive than pure silk and are more drapeable. They are less serviceable however, since they may crack and split after very little use or wear or when dry-cleaned.

## SILK

### Properties

absorbency	}	good to excellent
colourfastness		
dimensional stability		
drapeability		
dyability		
strength, dry		
wrinkle resistance	}	fair to poor
pressed-in crease retention		
resistance to: ageing		
abrasion		
heat		
perspiration		
sunlight		
strength, wet	}	

Sunlight and perspiration weaken silk fabrics. Strong soaps, age,

high ironing temperatures and chlorine bleaches cause silk to yellow.

Silk does not ignite readily, but materials added to silk to change its colour or other properties may in some instances create a flammability hazard.

### **Care**

Silk can be:

hand laundered, though certain dyes bleed colour when washed.

dry-cleaned.

ironed with a warm iron (250-275° or 120-135°C).

White silk can be bleached with hydrogen peroxide or sodium perchlorate bleaches, but chlorine bleaches should not be used.

### **Uses**

apparel

home furnishings

## WOOL

Wool is the fibre from the fleece of the sheep or lamb, or the hair of the Angora or Kashmir goat, the camel, vicuña, alpaca or llama. Mohair is the silky hair of the Angora goat.

"Wool", "new wool" or "virgin wool" is made of fibres that have never been used or reclaimed. It is usually stronger and more resilient than "reprocessed" or "reused" wool. The Textile Labelling Act of 1972 requires that the word "reclaimed", "reprocessed" or "reused" immediately precede the generic name of the fibre if the material has been produced from a reclaimed fibre.

Yarns made of wool, and the fabrics produced from them, may be classified as "woollen" or "worsted", depending upon the manufacturing process used. "Woollen" yarns contain both long and short fibres. "Woollen" fabrics woven from these yarns are soft, resist wrinkling, but do not hold sharp creases. "Worsted" yarns are made from the longer fibres, and are firm and smooth. Worsted fabrics are more durable than woollen fabrics. They tailor well, take a sharp crease, but may become shiny with use.

## WOOL

### Properties

absorbency	}	good to excellent
colourfastness		
dyability		
pressed-in crease		
retention (worsted)		
resiliency		
shape retention		
sunlight resistance		
warmth		
wrinkle recovery		
wrinkle resistance		
pilling	}	fair to poor
resistance to: bleaches		
friction		
moths		
perspiration		
strong soaps		
wash-and-wear qualities		
water repellency		

Wool, in some constructions, is not readily ignited and is self extinguishing. Effect of heat: become harsh at 212°F (100°C), scorches at 400°F (200°C) and chars at about 572°F (300°C). Wool may be allergenic.

### Care

Wool can be:

laundered, but only with care using cool water, mild detergent

and little rubbing or wringing. Felting occurs when wool is subjected to heat, moisture and mechanical action. Laundered garments should be dried flat.

dry-cleaned.

pressed with a cool iron and steam.

Garments tend to stretch during wear and during handling while wet. They should be brushed and allowed to "rest" between wearings to allow them to return to shape. (Recommended time 24 hours).

Wool absorbs odours, therefore garments should be hung where air can circulate around them. Wool articles should be moth-proofed before storing.

### **Uses**

apparel

blankets

carpets



# **THE MAN-MADE FIBRES**

## **MAN-MADE FIBRES**

In recent years, new textile fibres have been introduced to the marketplace. Through research, man has gained an understanding of fibre structure which has enabled him to create new fibre-forming substances possessing many different properties.

These man-made fibres fall into a few basic groups or generic classifications. The fibres in each group have certain family traits in common, although fibres of the same family but produced by different companies may have certain properties in varying degrees. Consumers should become familiar with each group's characteristics, just as in the past they have become familiar with the characteristics of the natural fibres.



Trademarks:

Celacloud

Celara

Chromspun

Quilticel

## TRIACETATE

Triacetate is a member of the new generation of acetates.

Triacetate's chief difference from acetate, and its most valuable characteristic, is resistance to heat. This property permits heatsetting treatments which give triacetate fabrics their outstanding features of durable crease and pleat retention, dimensional stability and resistance to glazing during ironing.

Articles containing triacetate fibres require very little special care, mainly because of the fibre's resistance to high temperature.

## TRIACETATE

### Properties

dimensional stability	}	good to excellent
drapeability		
resistance to: heat		
wrinkling		
wash-and-wear qualities	}	fair to poor
absorbency		
resistance to abrasion		
strength		

Triacetate ignites readily and is not self-extinguishing, but can be made flame resistant with some loss of other properties. Effect of heat: melts at 572°F (300°C) but will not stick at 560°F (292°C).

### Care

Triacetate can be:

machine washed and tumble dried.

ironed, if necessary with a hot iron. A safe ironing temperature is 450°F (230°C).

Pleated garments are best hand laundered.

### Uses

bonded and tricot fabrics  
textured knits  
permanently pleated garments  
sportswear

Trademarks:

Arnel  
Trilan



## ACRYLIC

The fibres in this group are characterized by a full, warm, soft hand somewhat similar to that of wool. Acrylic fibres are commonly found in the soft, high bulk textured yarns used in sweaters and fake furs.

Acrylic fabrics are stronger, softer and easier to care for than wool. They do not felt and provide more warmth for less weight.

Acrylic fibres are not damaged by the common solvents, and exhibit good resistance to weathering, bleaches, dilute acids and alkalis. Because of these qualities, acrylic fibre finds application in fine fabrics, work clothing and chemical-resistant fabrics used in industry.

## ACRYLIC

### Properties

colourfastness	}	good to excellent
dimensional stability		
moth and mildew resistance		
pressed-in crease retention		
resiliency		
sunlight resistance		
warmth		
wash-and-wear qualities		
wrinkle resistance	}	fair to poor
abrasion resistance		
pilling resistance		
strength		

Acrylic ignites and burns readily. Effect of heat: sticks 420-490°F (215-255°C). Acrylic can be heat set to give pleats and creases. It has low moisture absorbency and is subject to the build-up of static charges.

### Care

Acrylic can be:

machine washed and tumble dried at low temperatures. Remove garments from the drier as soon as tumbling stops.

ironed — a safe ironing temperature is 300-325°F (150-160°C).

bleached with either chlorine or peroxide bleaches.

Deep pile fabrics or artificial fur fabrics should be cleaned by fur cleaning processes unless labelled washable.

### Uses

apparel  
blankets  
carpets  
fleece and fur-like fabrics  
home furnishing  
work clothing

Trademarks:

Acrilan  
Courtelle  
Creslan  
Orlon  
Zefran

## ANIDEX

Anidex is a new elastic fibre. By virtue of its chemical structure, anidex has certain advantages over spandex and rubber. It can be chlorine bleached, and repeated washings and dry-cleanings do not impair its resiliency. It can be combined successfully in blends with both natural and man-made fibres.

Anidex blends find application in woven and knit fabrics where the anidex contributes properties of stretch and recovery. Apparel manufactured from the blend fabric allows freedom of body movement without sagging or bagging. The use of anidex blends in upholstery fabrics increases the scope of design since the fabric can stretch to conform to the contours of the furniture.

## ANIDEX

### Properties

flexlife	}	excellent
resistance to: ageing		
body oils		
chlorine bleaches		
cosmetic lotions		
dry-cleaning solvents		
heat		
household detergents		
light	}	moderate
holding power		
strength		

Anidex fibres do not deteriorate with age unless exposed to temperatures above 325°F (160°C) for prolonged periods of time.

Anidex does not ignite readily but will burn when ignited.

### Care

Anidex can be:

machine washed and tumble dried at "normal" settings.

bleached with chlorine bleaches.

pressed (safe ironing temperature 320°F or 155°C).

### Uses

hosiery

knit and woven outerwear

lingerie

stretch fabrics

upholstery fabrics, knit and woven

Trademark:

Anim/8



## AZLON

Azlon fibres are produced from proteins found in natural substances such as skim milk, peanuts and corn. These inexpensive but little-used fibres possess some wool-like properties: softness, warmth and good crease-recovery. However their low strength, especially when wet, makes them unsuitable for use on their own. They are generally found in blends with wool and occasionally in blends with rayon.

## AZLON

### Properties

resiliency	}	good
warmth		
whiteness retention		
resistance to alkalies	}	fair to poor
strength		

Azlon felts badly in hot water with agitation.

### Care

Azlon can be:

laundered, but only with care using cool water, mild detergent and gentle action.

bleached with peroxide bleaches.

### Uses

in blends with other fibres in  
apparel  
blankets

Trademarks:

Fibrolane  
Merinova



## GLASS

Glass fibres have high strength and are resistant to heat, flame and most chemicals. They do not absorb moisture and they have little stretch. They can be made into soft, flexible fabrics for use in home furnishings and industrial products, but their low abrasion resistance, poor bending strength and heavy weight makes them unsuitable for apparel textiles.

Fabrics made from glass fibres are also used as reinforcement for moulded plastics in boats and aircraft parts. Batting made from glass fibres is used as thermal insulation.

A new glass fibre known as "Beta Glass" is claimed to be more abrasion-resistant because it is spun in a much finer filament size. Specialized garments such as space suits and protective clothing have been made from "Beta Glass".

## GLASS

### Properties

colourfastness	}	good to excellent
dimensional stability		
resistance to: chemicals		
heat		
mildew		
moths		
sunlight		
weather	}	fair to poor
wrinkling		
strength	}	fair to poor
resistance to abrasion		
(except for new fine continuous filament yarn)		

Glass fibres are non-flammable except when treated with flammable resinous finishes.

### Care

Glass fibre cloth can be:

laundered (preferably by hand) in warm water with mild soap or detergent. It should be drip dried without wringing or flexing. No ironing is needed.

Glass fibre fabrics, especially those of the net variety, are liable to shed small fragments of glass fibre which are irritant to some people. It is therefore important that such fabrics be laundered separately.

Dry-cleaning is not recommended.

Draperies should be hung so that they do not touch the floor or the window sill.

## **Uses**

sheer curtains

draperies

industrial fabrics

Trademarks:

Fiberglas

Vitron

Beta Glass

## METALLIC

The Canadian Textile Labelling Act defines a metallic fibre as any manufactured fibre composed of metal, plastic-coated metal or a plastic or other core covered with metal.

For hundreds of years the people of Persia and India have made by hand the metallic yarns used in elegant and expensive fabrics. Today, metallic yarns produced by machine are used in the manufacture of inexpensive mass-produced textiles. Fibres may be made of aluminum, gold, silver, copper or chrome. These metals may be sandwiched between layers of plastic or coated with plastics to give durability, flexibility and comfort.

## METALLIC

### Properties

resistance to: chlorine	}	excellent (varies somewhat with the fibres and adhesives used)
salt water		
weathering		

Metallic yarns and fabrics are nonabsorbent and non-tarnishing. They are very sensitive to heat because the plastic coatings soften and shrink. The sensitivity to heat varies, of course, with the substance used in coating.

### Care

Metallic fabrics can be:

- washed when the amount of metallic yarns is small and the other fibres present are washable.

- cleaned, generally when used as a decoration for another material, by the same methods used for the base material.

- ironed at low temperatures so as not to melt the plastic coatings.

Read hang tags and labels for special instructions.

### Uses

decorative fabrics and trimmings

home furnishings

hosiery

Trademarks:

Lamé (acetate covered)

Lurex (acetate covered)

Durastran



## MODACRYLICS

The modacrylics are very much like the acrylics. They do differ in that they are much softer and melt at lower temperatures than the acrylics.

The low softening temperatures of modacrylic fibres allow them to be stretched, embossed and moulded into special shapes. The fibres may be produced with controlled heat shrinkage capacities: When such fibres of different shrinkages are combined in the surface of a pile fabric, the application of heat develops fibres of different lengths, and produces a surface that resembles the hair and undercoat of natural furs.

The modacrylics are self-extinguishing, and for this reason they are often blended with other fibres to reduce the flammability of carpets and other textile items.

## MODACRYLICS

### Properties

colourfastness	}	good to excellent
resiliency		
resistance to: chemicals		
mildew		
moths		
sunlight	}	fair to poor
wrinkling		
softness		
warmth		
wash-and-wear qualities		
dimensional stability	}	fair to poor
resistance to: abrasion		
pilling		
strength	}	

Modacrylics are flame resistant and generally self-extinguishing. Effect of heat: soften at comparatively low temperatures, shrink at 260°F (125°C), stiffen and discolour when exposed to pressure and temperatures above 300°F (150°C).

### Care

Modacrylics can be:

machine washed in warm water and tumble dried at low temperature. Remove article from machine as soon as drying cycle stops.

ironed if necessary with a cool iron, 200-250°F (95-120°C).

Deep pile fabrics or fur-like fabrics should be dry-cleaned by the fur cleaning process.

## Uses

blankets  
carpets  
doll's hair  
draperies  
fur-like pile fabrics  
knitwear  
wigs

## Trademarks:

Dynel (*discontinued 1974*)  
Verel  
Kanealon  
Teklan

## NYLON

Nylon was the first truly synthetic fibre to be developed. It was first introduced in 1939 for use in women's hosiery, but with the outbreak of World War II all production was adapted to military purposes. The use of nylon for a wide variety of consumer and industrial products has come about since the end of the war.

Nylon excels in strength and elasticity. A fibre with these characteristics is extremely versatile, and nylon is now used to produce goods as delicate as sheer hosiery and as strong as tire cords.

Nylon washes easily, dries quickly, needs little pressing and holds its shape well.

## NYLON

### Properties

colourfastness	}	good to excellent
dimensional stability		
elasticity		
resiliency		
resistance to: abrasion		
mildew	}	fair to poor
moths		
perspiration		
strength		
absorbency	}	fair to poor
resistance to: pilling		
sunlight		
wrinkling	}	

Nylon, unless treated, will develop static charges.

Nylon can be heat set, which permits the development of permanent pleats and creases. The same characteristic allows the manufacturer to introduce bulk into the yarn.

It is not readily ignited but when ignited it burns, melts and drips. Effect of heat: yellows and creases slightly at 300°F (150°C) after five hours exposure, and melts or sticks at 420-500°F (215-260°C) depending on the type of nylon.

### Care

Nylon can be:

washed by hand or machine in soap or detergent.

tumble dried at low temperature.

bleached with hydrogen peroxide, sodium perborate or chlorine bleaches.

ironed at low temperature. A safe temperature is 300-375°F (150-190°C).

## Uses

apparel  
home furnishings  
hosiery  
household textile products  
rugs and carpets  
stretch fabrics  
tents  
textured yarns

## Trademarks:

Antron

Cadon

Cantrece

Cumuloft

501/N

Nomex → *New generic name aramid~~s~~ proposed.*

Qiana

Unel

Unel 5

## POLYESTER

The outstanding characteristic of polyester fibres is their ability to resist wrinkling and to spring back into shape when creased. In addition, polyesters have good dimensional stability, wash and dry easily and quickly, and possess excellent wash-and-wear or minimum care characteristics. As a consequence, one of the chief uses of polyester fibres is in blends in apparel fabrics of the wash-and-wear, minimum-care or durable-press types. Recently polyester has been one of the leading fibres in the "knit revolution".

## POLYESTER

### Properties

colourfastness	}	good to excellent
dimensional stability		
pressed-in crease retention		
resiliency		
resistance to: abrasion		
mildew		
moths		
perspiration		
sunlight		
wrinkling		
strength	}	fair to poor
wash-and-wear qualities		
absorbency		
resistance to: oily stains	}	
pilling (spun yarns)		

Polyester can be heat set (pleats and creases). It does not ignite readily but when ignited, it burns, melts and drips. In blends, particularly with cotton and rayon, it burns readily. Effect of heat: sticks at temperatures above 445°F (230°C) and melts above 480°F (250°C) (dependent upon the type of polyester).

### Care

Polyester can be:

machine washed in warm water.

tumble dried at a low temperature setting (remove article once tumbling ceases).

bleached with chlorine bleach.

ironed at a low setting (safe ironing temperature 300-350°F or 150-175°C).

dry-cleaned.

### Uses

apparel  
carpets  
curtains

fiberfill for pillows  
sleeping bags, ski jackets  
home furnishings  
thread

Trademarks:

Crimplene — *licensed process*

Dacron

Fortrel

Kodel

Tergal

Terylene

Tetoron

Trevira

## OLEFIN

The olefin fibres, polyethylene and polypropylene, are products of the petroleum industry, derived from propylene and ethylene gases. Both fibres are characterized by their resistance to moisture and their chemical inertness. Of the two, polypropylene is more favoured for general textile applications.

The olefins have the lightest weight of all fibres and do not absorb moisture. Until recently, they have been difficult to dye.

## OLEFIN (Polyethylene & Polypropylene)

### Properties

resistance to:	abrasion	good to excellent
	ageing	
	chemicals	
	mildew	
	perspiration	
	pilling	
	stains	
	sunlight	
	weather	
	wrinkling	
absorbency		fair to poor
dyability		

Olefin is very light in weight and provides better thermal insulation than wool. Olefins containing thermal antioxidants do not ignite readily but once ignited burn, melt and drip. Effect of heat: polypropylene softens at 285-300°F (140-150°C), melts at 320-350°F (160-175°C). Polyethylene is more heat sensitive. It melts at 230-250°F (110-120°C), depending upon fibre type.

### Care

Olefins can be:

machine washed in lukewarm water. A fabric softener should be added to the final rinse.

tumble dried at a very low setting. Remove from dryer after tumbling cycle has stopped. Gas-fired dryers of the commercial or laundromat type should not be used.

dry-cleaned — follow directions given on labels and hang tags.

Do not iron articles made of 100% olefin. Blends may be ironed at low temperatures (250°F or lower or 120°C).

## Uses

apparel  
blankets  
floor coverings  
    (including indoor-outdoor carpets)  
household textile products  
nonwoven products  
ropes and cordage  
upholstery

## Trademarks:

Herculon

Propylon — 70% triacetate / 30% polypropylene

Protel

Polycrest — yarn

Vectra

## RAYON (*Modal, Viscose, Cuprammonium or Cupro*)

Rayon was the first of the man-made fibres and is the end result of Count Chardonnet's work in France in 1884. In the production of rayon, purified cellulose from wood pulp or cotton linters is converted into a soluble compound. A solution of this compound is passed through the spinneret to form soft filaments which are then converted into almost pure cellulose.

In the past few years several new faces have been seen within the rayon family. Fabrics made from these "new" fibres do not lose their shape when wet as the other rayon fibres do. They also have greater strength and greater resistance to wrinkling.

Rayon is one of the least expensive of the man-made fibres and has been used extensively in blends.

### RAYON

#### Properties

absorbency	}	good to excellent
colourfastness		
resistance to: dry-cleaning		
perspiration		
sunlight		
washing	}	fair to poor
drapeability		
dyability		
dimensional stability		
resiliency		
resistance to: abrasion		
mildew		
wrinkling		
wash-and-wear qualities		
wet strength		

Rayon ignites readily and is not self-extinguishing. It can be made flame resistant. Effect of heat: decomposes after prolonged exposure at 300-400°F (150-200°C).

#### Care

Rayon can be:

washed by hand with lukewarm water, unless manufacturers specify otherwise. Do not wring or twist article.

machine washed and tumble dried.

bleached with chlorine bleach; some finishes are sensitive to chlorine bleaches.

ironed with a moderate iron 300-350°F (150-175°C).

dry-cleaned.

## Uses

apparel  
home furnishings  
household textile products  
linings  
rugs and mats  
industrial uses

## Trademarks:

Avril - *Modal*  
Bemberg - *Cupro*  
Coloray - *Viscose*  
Darelle - *Viscose*  
Durafil - *Viscose*  
Evlan - *Viscose*  
Enkrome - *Viscose*  
Fibro - *Viscose*  
Zantrel - *Modal*.

*Polynosic - Modal.*

## RUBBER

The definition used in the Textile Labelling Act for rubber includes fibres made from both natural and synthetic rubbers. Natural rubber fibres are made from the raw rubber liquid that comes from the rubber tree, while man-made rubbers are products of the petrochemical industry. The Textile Labelling Act permits certain specific man-made rubber fibres to be classified as "lastrile".

In textile applications, rubber fibres are generally used as a core around which other fibres are wrapped to protect the rubber from abrasion.

## RUBBER

### Natural Rubber Properties

elasticity	}	good
holding power		
resistance to: body oils	}	low
cosmetics		
light		
perspiration		

Rubber does not ignite readily but when ignited, it burns and produces dense smoke. Effect of heat: at 300-400°F (150-200°C) it becomes permanently soft and sticky.

### Care

Follow manufacturer's recommendations. If care instructions did not come with the garment, launder by hand in warm water and drip dry. Avoid caustic soda and chlorine bleach.

### Uses

elastic webbings, bands, tapes, core threads  
elastic fabrics  
foundation garments  
swimwear

Trademark:

Lastex



## SARAN

Sarans, sometimes called chlorofibre, are smooth, nonabsorbent fibres which can be made into monofilament or film fabrics. They are tough, durable and weather resistant. The fibres find little application in apparel but are used for upholstery fabric and water-repellent fabrics for lawn and patio furniture and rugs.

## SARAN

### Properties

resiliency	}	good to excellent
resistance to: abrasion		
acids and alkalis		
fungi		
mildew		
moisture		
moths		
sunlight		
absorbency	}	poor
resistance to heat		

Saran does not support combustion.

### Care

Saran can be:

washed with soap and water.

Do not iron.

### Uses

auto seat covers

draperies

outdoor rugs

outdoor furniture upholstery

webbing

Trademarks:

Rovana

Saran

Velon



## SPANDEX

Yarns made of this elastic fibre are used in applications where good holding power combined with softness and light weight is desired. The spandex fibres are considerably stronger than natural rubber, have very high capacities for extension and, unlike the rubber fibres, are white in colour.

The fibre can be made into a filament yarn to be used either uncovered or covered with another textile fibre.

Foundation garments containing spandex are soft and provide great freedom of movement.

## SPANDEX

### Properties

elasticity	}	— excellent
resistance to: cosmetic lotions		
and body oils		
flexing		
sunlight	}	

Spandex yellows with age and at temperatures above 300°F (150°C). It does not ignite readily but when ignited it melts and burns. Effect of heat: it sticks at 345-450°F (170-230°C) and melts at 445-590°F (228-310°C) (depending on fibre type).

### Care

Spandex can be:

machine washed and tumble dried but only at low temperature.  
bleached, but only with oxygen or perborate bleaches, NOT with chlorine bleaches.

ironed at low temperature: below 300°F (150°C). Iron quickly and do not leave the iron in one position too long.  
dry-cleaned.

### Uses

apparel  
elastic  
form-persuasive garments  
foundation garments  
surgical hosiery

Trademarks:

~~Blue~~  
Lycra  
~~Spandelle~~ *Spanzelle*  
Unel  
Vyrene



## VINAL

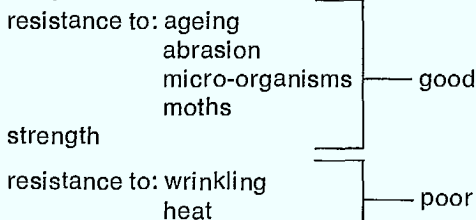
Vinal is the generic name given a group of fibres which are extremely strong and resistant to wear. The fibres are white in colour, possess a silk-like lustre and have a soft, warm feel.

Vinal fibres are highly heat sensitive. Although they can be woven to resemble wool or silk, the fibres do not recover from wrinkling.

Most of the vinal produced is used in industrial products.

## VINAL

### Properties



Vinal is flame resistant.

### Care

Vinal can be:

washed in warm water with a mild detergent and drip dried.

ironed at a warm setting only when dry; fabric will stiffen if ironed when damp.

### Uses

apparel (in blends)

industrial fabrics

lining fabrics

Trademarks:

Kuralon

Mewlon



## VINYON

Vinyon fibres may also be called chlorofibres. They soften at low temperatures but have high resistance to chemicals. They are most commonly used in industrial applications as a bonding agent for non-woven fabrics and products.

In recent years, vinyon has been finding application in tropical countries. Its resistance to deterioration under even the most humid conditions makes it admirably suited for mosquito netting, tents and furnishing fabrics.

In more temperate countries, its use in fire resistant draperies is increasing.

## VINYON

### Properties

elasticity	
resistance to: alcohols	excellent
bacteria	
chemicals	
fungi	
gasoline	
mildew	
moisture	
moths	
water	
resistance to heat	poor

Vinyon does not support combustion. Effect of heat: shrinks when heated above 150°F (65°C), becomes tacky at 185-215°F (85-102°C), and melts around 260°F (125°C).

### Care

Vinyon can be:

washed in warm water with a mild detergent and drip dried.

Do not tumble dry or iron.

### Uses

awnings  
bonding agent in nonwoven textiles  
curtains  
mosquito netting  
shower curtains  
waterproof clothing  
work clothes

Trademark:

Rhovyl



## **FABRIC CONSTRUCTION**

The appearance and performance of a fibre is often changed by the way in which it is made into a fabric.

Basically there are five methods by which fabrics are made:

1. Interlocking of fibres, including felting and bonding or fusing
2. Braiding
3. Netting or lacemaking
4. Knitting
5. Weaving

Since most of the fabrics purchased by consumers are produced either knitting or weaving, discussion will be limited to these two methods.

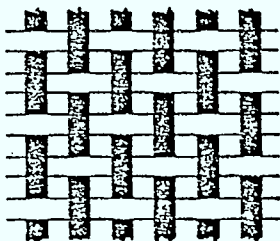
## WEAVING

Weaving is the process of interlacing two sets of threads at right angles to each other. The threads that run lengthwise in a fabric are called warp threads. The threads that go crosswise are called weft or filling threads. Darning by hand produces an effect somewhat similar to that obtained by weaving cloth on a loom.

There are three basic weaving patterns: plain, twill and satin.

### PLAIN WEAVE

The plain weave is the simplest and most frequently used of the three basic weaves. Each filling yarn passes over one warp yarn, and under the next. Each warp yarn passes over one filling yarn, and under the next.



### PLAIN

Because it has the maximum number of interlacing or binding points possible, the fabric will be firmer and stronger than a fabric made in a twill weave from the same amount and kind of yarn.

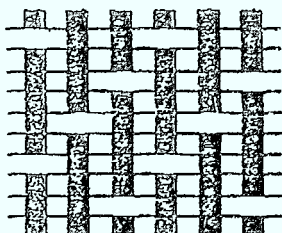
Some fabrics made from the plain weave are:

batiste  
buckram  
cambric  
chiffon  
crepe  
flannel  
organza  
organdie

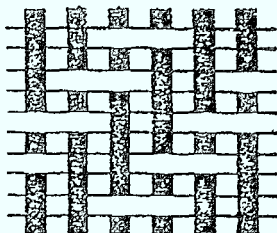
poplin  
shantung  
taffeta  
tropical suiting  
voile

## TWILL WEAVE

This weave is characterized by a diagonal rib or twill line. The filling yarns are interlaced with the warps in such a way as to form diagonal ridges across the fabric.



**2 x 1 TWILL**



**2 x 2 TWILL**

It is possible in a twill weave to accommodate more individual warp and filling yarns in the fabric than the maximum that can be accommodated in a plain weave using the same yarn. As a result, similar yarns can be made into heavier fabrics by using twill rather than plain weaves.

Some fabrics made from the twill weave are:

denim

jean

gabardine

glen check

serge

regatta

regina

silesia

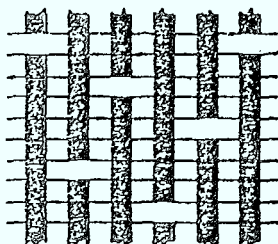
surah

whipcord

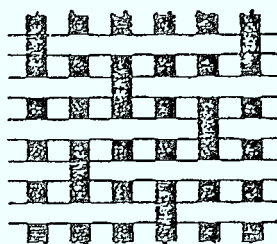
ticking

## SATIN WEAVE

In the satin weave, warp yarns float or pass over four or more filling yarns. The sateen weave is similar to the satin except that filling yarns float on the surface.



**WARP SATIN**



**WEFT SATEEN**

The satin and sateen weaves produce smooth, lustrous, rich-looking fabrics that give reasonably good service if they are not subjected to excessive hard wear.

Some fabrics made from the satin and sateen weaves are:

- doeskin cloth
- duchesse satin
- italian
- satin drill
- satin-back gabardine

## KNITTING

Although commercial knitting started in the 16th century, knit fabrics have been limited until recently to a narrow range of end-uses. The availability of the continuous filament man-made fibres of nylon and polyester types, together with the development of textured yarns produced from nylon and polyester, has brought about a revolution in knits. This development has widened the range of knitted fabrics to such an extent that they are now competing seriously with woven fabrics.

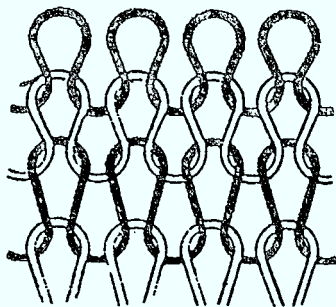
Knitting creates a fabric that stretches with movement of the body.

There are two main categories of knitting by machine — weft knitting and warp knitting. Fabrics in both of these categories consist essentially of a series of interlinked loops of yarn.

### WEFT KNITTING

This is the technical term for the kind of knitting done by hand in making sweaters and socks.

Weft knitting is a circular or flat knit with loops running across the fabric. The fabric is made one loop at a time, and each new row of loops hangs on the previous row of loops in the fabric. Weft knits are liable to “run” or “ladder” if a loop is broken.



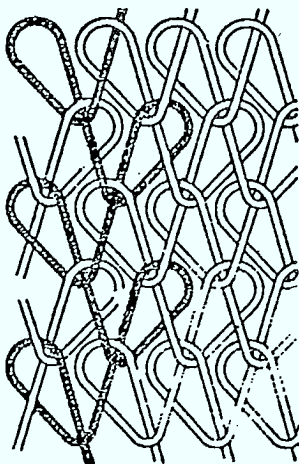
Loops of Knitted Construction.

Jersey is a plain weft knitted fabric in tubular form made on a circular machine.

Double knitting, producing “double knits”, is done with two sets of needles. The two sides of the cloth are interlocked, which results in a heavier fabric that holds its shape and is long wearing. Many of the dress and suit fabrics seen today are doubleknits.

## WARP KNITTING

In this type of knitting, the threads run in loops in a lengthwise direction. They zigzag slightly to interlock with adjacent loops. The resultant fabric has a cobwebby mesh and will not drop stitches or ladder. Warp-knitted fabrics are usually of a closer construction and less elastic than weft-knitted fabrics.



Back of warp knitted half tricot.

The warp knit which is probably most familiar to consumers is tricot, used extensively in women's underwear.

## FIBRE BLENDS AND COMBINATION FABRICS

In recent years there has been much emphasis placed on fabric blends and on combination fabrics.

Blended fabrics are made of yarns in which two or more fibres are mixed before the yarn is spun. These yarns may then be used as either warp or filling or may be used in both directions in woven goods.

Combination fabrics contain yarns of different fibres. Warp and filling may be of different fibres, each colour of yarn in yarn dyed fabrics may be a different fibre, or each ply of a plied yarn may be a different fibre. Combination fabrics were made in ancient times. Many museums have examples of linen/wool, linen/silk and wool/silk combination fabrics, from Egypt and other sources, up to 2000 years old.

Through the use of blends, manufacturers have been able to produce new fabrics which maximize the best features of the combined fibres and minimize less desirable ones.

Fibres of low moisture absorption produce fabrics which dry quickly. In apparel, this feature may cause the wearer to feel hot and sticky. If another fibre which absorbs moisture is blended with the low absorber, a happy combination of comfort and drip dry properties may

result. This is indeed the case with polyester/cotton blends used in men's shirts. Nylon can be used in blends with wool to add strength. Acrylics can be used in blends to improve softness and warmth.

The best blends are those in which the proportions of the fibres used are such that both (or all) fibres present contribute to a balance of properties which will afford optimum performance in the completed fabric. A general rule in determining the optimum amount of the fibre for a blend is that, for satisfactory performance, a fabric should contain at least 50 percent of that fibre having the major characteristic desired.

The Textile Labelling Act requires that each fibre that constitutes 5 percent or more by weight of a fabric must be listed:

- (i) by its generic or family name
- (ii) in order of predominance by weight
- (iii) with the amount in which it is present preceding or immediately following the generic name of the fibre.

To use this information effectively, consumers must know the general characteristics of the various fibres present and what they contribute to the product.

Care of fabric blends and combination fabrics can be a problem. No general rules are possible because of the great variety of types and quantities of fibres used. One should pay particular attention to any care instructions which come with the article. If care instructions are lacking, handle the product according to the procedures recommended for the most sensitive fibre in the blend.

## WASH-AND-WEAR FABRICS

Fabrics can be made softer or stiffer, made to resist creases or keep pleats permanently, through the application of chemical finishes. The discovery of resin finishes has proved to be extremely fruitful and has led to fabrics and garments bearing descriptions such as minimum-care, easy-care, minimum-iron, permanent press, durable press.

The minimum-care fabrics, often of cotton or cotton blended with a synthetic, are resistant to creases during laundering. As a result, when they are dried they may be smooth enough to be worn without ironing or may require only a touch of the iron.

Durable press is a process begun by the cloth finisher and completed by the garment manufacturer. The finished garment is "baked" in a special oven. By using durable press it is possible to produce a fabric that is crease-resistant and a garment that has durable pleats and shaping. Correct size is important in durable press clothing because alterations are difficult and original hem and seam lines cannot be removed by home ironing.

### Care

#### Wash frequently

Pre-treat oily stains before washing by rubbing a small amount of concentrated liquid detergent on the spot.

Launder the garments according to the manufacturer's instructions. Should instructions be lacking, launder the garment in any of the following ways:

1. Machine wash and tumble dry; remove from the dryer once tumbling stops and put on hangers.
2. Machine wash and drip dry; remove items from washing machine before spinning cycle.
3. Hand wash and drip dry; do not wring or twist.
4. Machine wash and line dry after spinning. This is the *least preferred method* since the spinning cycle adds wrinkles that are difficult to remove.



## CARE LABELLING

The Government of Canada, working with consumer organizations and Canadian industry, has devised a new set of symbols which, when they appear on the label of a garment, tell the consumer the manner in which the garment should be cleaned. These new symbols tell what should and should not be done about washing, bleaching, drying, ironing and dry-cleaning.

Such information is not uncommon now, but it is usually printed on a package or a tag which is thrown away. In order to provide a more permanent set of care instructions, it is proposed that the care symbols be printed or woven on a label fastened securely to the textile article. The symbols may appear on a separate label or on a label in conjunction with other information such as the fibre content or the maker's name. On yard goods, the care symbols may be printed along the salvage.

In Canada there will be only one set of standard symbols. They will be compact and they will be in colour. Three colours will be used: the traffic-light colours of red, amber and green. Red means that the action represented by the symbol — for instance, bleaching — should not be carried out. Amber means that some caution in carrying out the operation is necessary. Green means that no special precautions are needed.

If a garment contains more than one fabric, the one requiring the greatest care will determine the marking.

The care labelling system is voluntary. Garment makers do not have to use the system, but more and more will do so if consumers demand it. Consumers who like the system should ask for it when they shop.

# For your laundry area.

## This is what the symbols mean:

	Stop 	Be careful. 	Go ahead. 
 <b>WASHING</b>	 Do not wash	 Machine washable in warm water.  Machine washable in lukewarm water.  Hand washable in lukewarm water.	 Machine washable in hot water.
 <b>BLEACHING</b>	 Do not bleach	 Use chlorine bleach as directed.	
		 Tumble dry low.	 Tumble dry medium-high.
 <b>DRYING</b>		 Dry flat.	 Hang to dry soaking-wet.
		 Hang to dry.	
 <b>IRONING</b>	 Do not iron	 Iron medium.  Iron low.	 Iron high.
 <b>DRY CLEANING</b>	 Do not dry clean	 Dry clean low.	 Dry clean.

# Pour votre salle de lavage.

## Voici la signification des symboles

ARRÊTEZ



PROCÉDEZ  
AVEC PRUDENCE



PROCÉDEZ SANS  
PRÉCAUTIONS  
PARTICULIÈRES



LAVAGE



Ne pas laver



Laver à la machine  
à l'eau chaude



Laver à la machine  
à l'eau tiède



Laver à la main  
à l'eau tiède



Laver à la machine à l'eau  
chaude brûlante



BLANCHIMENT



Ne pas blanchir



Utiliser un chlorure décolorant  
suivant les indications



SÉCHAGE



Sécher par culbutage à  
basse température



Sécher à plat



Sécher par culbutage à  
moyenne ou haute température



Suspendre mouillé-  
à-tordre pour sécher



REPASSAGE



Ne pas repasser



Repasser à  
moyenne température



Repasser à basse  
température



Repasser à haute  
température



NETTOYAGE  
À SEC



Ne pas  
nettoyer à sec



Nettoyer à sec  
à basse température



Nettoyer à sec



## GLOSSARY

**ABRASION RESISTANCE** The degree of resistance to surface wear by rubbing.

**ABSORBENCY** The extent to which a textile fibre or product takes in moisture. Garments made of absorbent fabrics tend to be more comfortable because they absorb perspiration.

**BONDED FABRIC** A layered fabric structure wherein a face fabric is joined to a backing fabric, such as tricot, with an adhesive that does not significantly add to the thickness of the combined fabrics.

**CELLULOSE** The fibrous substance found in the cell walls of plants.

**CORE-SPUN YARN** (Core Yarn) A yarn consisting of a readily separable core surrounded by fibre.

**CREASE-RETENTION, PRESSED-IN** That property of a fabric which enables it to maintain an inserted crease.

**CROCKING** The transfer of colour from the surface of a fabric to another surface by rubbing.

**DIMENSIONAL STABILITY** Tendency of a fabric or garment to retain its shape and size after being subjected to wear, washing, or dry cleaning.

**DRAPEABILITY** A term used to describe the way a fabric falls when hung. Fabrics which are soft and pliable are often said to have good drapeability.

**DURABLE-PRESS** A process which enables a garment or other textile product to retain substantially the initial shape, flat seams, pressed-in creases, and unwrinkled appearance during use and after laundering or dry-cleaning.

**DYABILITY** Affinity for dyestuffs.

**EASY CARE** (Minimum Care) A term applied to fabrics, garments, and household textile articles which can be washed satisfactorily by normal home laundering and used or worn after light ironing. By "light ironing" is meant no starching, no dampening, and a relatively small expenditure of physical effort.

**ELASTICITY** Ability to return quickly to substantially the original dimensions after being stretched.

**FELT** A fabric of interlocking fibres built up by a suitable combination of mechanical or chemical action, moisture and heat, without spinning, weaving, or knitting.

**FIBRE** A term for the various types of matter (natural or man-made) which form the basic elements of textile yarns and fabrics.

**FIBERFILL** Virgin man-made fibres specially engineered as to fineness, cut length and crimp for use as filling materials.

**FILAMENT** A continuous individual strand which can function as a yarn.

**FILAMENT YARN** A yarn composed of two or more continuous filaments assembled or held together by twist or some other means.

**FINISHES, FABRIC** Characteristics given to fabrics by treatments such as mercerizing, embossing, water-proofing and the application of resins.

**FLEX ABRASION** Wear caused by repeated bending and rubbing.

**GENERIC** The family name for a type of fibre.

**HAND** A term used to describe a composite of textile properties such as flexibility, resiliency, softness or stiffness, texture, and warmth.

**HEAT SENSITIVITY** Property of a material which causes softening, shrinking, melting or discolouration when heat is applied.

**HEAT SET** The use of heat on man-made fabrics to stabilize size or shape, or to make pleats and creases durable to repeated laundering or dry-cleaning.

**MERCERIZING** A treatment applied to cotton and some rayon which adds strength, lustre, absorbency, and an increased affinity for dye.

**NONWOVEN FABRIC** Fabric produced by the bonding or interlocking of fibres, or both.

**PILLING RESISTANCE** Resistance to the formation of pills (bunches or balls of tangled fibres) on the fabric surface.

**RESILIENCY** The property of fibres or fabrics that causes them to spring back when crushed or wrinkled.

**SOLUTION DYEING** The addition of colour to the chemical liquid before the fibre is formed through the spinneret, which results in the distribution of dye throughout the fibre.

**SPUN YARN** A yarn composed of fibres (short length or staple) twisted together.

**STAPLE** Length of the raw fibre, both natural and man-made; also a term for short fibres, as opposed to continuous filament.

**SUNLIGHT RESISTANCE** Resistance to fading and deterioration when exposed to sunlight.

**WASH-AND-WEAR** A term applied to garments which satisfactorily retain their original appearance after repeated wear and suitable home laundering with little or no pressing or ironing.

**WATER RESISTANCE** Resistance to wetting and penetration by water.

