ERI SILK SPUN YARN & FABRIC- A Review

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ABSTRACT

The textile sector in today's scenario is moving towards value addition products and new innovation. Lot of developments has been taking place in Machinery, Technology and New product development. The textile field is expanding its using through Technical Textiles, Medicals Textiles, Nano technology etc.,. Indian silk industry is one of the premier industries producing silk and next to china. Today the sericulture industry is faced with many problems and silk from china is being imported to combat shortage of silk. The textile product made from silk is of more lustrous and gives rich look to the wearer. The cost of the silk product is also very high when compared to other textile products. The silk manufacturing is a specialized skill required area and the silk production needs a very good technical skill and knowledge. Eri silk, also known as Endi silk or Errandi silk, is a type of silk produced by the caterpillar of the Samia ricini, a species of silk moth native to parts of India, China, and other Southeast Asian countries. Unlike other types of silk, such as mulberry silk produced by the Bombyx mori silkworm, Eri silk is produced from the open-ended cocoon of the Eri silkworm. This paper deals with the yarn and fabric produced from ERI silk Cocoon waste.

Keyword : ***- Silk, Eri Silk, Bombyx mori silk, mulberry silk, Cocoon***

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1. INTRODUCTION

The textile sector in today's scenario is moving towards value addition products and new innovation. Lot of developments has been taking place in Machinery, Technology and New product development. The textile field is expanding its using through Technical Textiles, Medicals Textiles, Nano technology etc.,. Indian silk industry is one of the premier industries producing silk and next to china. Today the sericulture industry is faced with many problems and silk from china is being imported to combat shortage of silk. The textile product made from silk is of more lustrous and gives rich look to the wearer. The cost of the silk product is also very high when compared to other textile products. The silk manufacturing is a specialized skill required area and the silk production needs a very good technical skill and knowledge. The silk fibre is a continuous protein filament produced by a variety of silkworms. The silkworm extrudes the liquid fibre from the two excretory canals of sericites which unite in the spinneret in its head, each of them termed as brin. The two brins are cemented together in the spinneret by sericin and become a single continuous fibre called the bave or filament. The sericin have is thus made by the union of two brins held together by sericin.The classification of silk can be broadly divided into mulberry and non-mulberry silk. Mulberry silk, also known as Bombyx mori or cultivated silk is produced by silkworm larvae which is cultivated in special roofed enclosures and fed with freshly picked mulberry leaves. The essential features of this type of silk are that they are fine, almost white when degummed, soft and lustrous. There are three types mulberry silk cocoons, namely, univoltine. bivoltine and multivoltine. In multivoltine races, the lifecycle is shortest because of the ecological conditions (tropical areas) where they are reared and they yield as many as seven to eight generations in a year About 80-85% of the entire world wide silk cocoon harvest consists of mulberry silk.The silk of Bombyx mori contains, in addition to two protein substances namely fibroin and sericin, small quantities of other matters like fats, waxes, colouring matter and minerals. Fibroin constitutes 70-80%of its weight, sericin encloses the fibroin in a continuous sheath, accounting for 20-30% of the weight, while the other matters form a very small part of the silk, not exceeding 2-3%. Both the mulberry and non-mulberry silks consist of a trilobular twin filament, the fibroin, which are cemented by a gelatinous protein, the sericin, which can be removed by degumming. These two types differ not only in appearance, filament structure and self-color but also in their sericin content. As compared to mulberry silk, non-mulberry silk filaments are coarser, more irregular and brownish in the natural state. Mulberry silk contains about 20-30% sericin, whereas non-mulberry silk has about 8-15% only.

2. MECHANICAL PROPERTIES OF SILK

Silk realization from cocoons depends on providing optimum cultivation conditions. By providing these conditions, production of 1 kg of raw silk from 9 to 10 kg of cocoon has been brought down to 5-6 kg. The raw or reeled silk produced is called 'grege'. The total length of the filament spun by the silkworm for building its cocoon is 2500-3000m for the cultivated silkworm. Out of this, only about 1200m can be reeled into grege, forming the best grade of raw silk. Raw silk threads can be directly used as weft and warp material. The sericin swollen by hot water used in reeling, cements the threads and gives them the necessary abrasion resistance for weaving, Classic silk woven fabrics are made by twisting the raw silk threads. Silk is unique among the natural fibres because of its fairly high strength and breaking extension, which combine to give a very high work of rupture. Silk can withstand large number of repetitive bending cycles before it ruptures. As a result, silk has proved to be highly desirable in the manufacture of textile materials, where toughness is required. Silk shows a moderately high degree of dimensional or elastic recovery from large stress and strain deformation. The recovery of cultivated silk at relatively low stress (less than 9g per tex) compares favorably with nylon. Tassar silk shows better recovery from strains above 12% than does cultivate silk, although the recovery at strains below 12% is much lower. A direct relationship occurs between fibre fineness and recovery for any given stress, finer the fibre better is the recovery.

The elastic recovery of silk varies with the moisture content of the fibre. Lucas et al. [1] have compared the recovery of silks of different chemical composition at 65% RH and 20◦C and in water at 20˚C and 90˚C. Bombyx silk showed a decreasing recovery with increasing humidity. The Anaphe silk showed better recovery in air than either the Bombyx or Tassar silk and is completely unaffected by changes in moisture content at either temperature. On the other hand, the recovery of Tassar silk is most affected by changes in both moisture content and temperature showing a very high recovery over a range of extensions. related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work. Hamburger et al. [2], who carried out work on the instantaneous elastic deflection or perfect elasticity of fibres at low strains, determined from sonic modulus measurements, have shown that silk at 5% strain was almost perfectly elastic in nature. Owen [3] has carried out a systematic study on the bending properties of plain woven silk fabrics made out of Bombyx mori and Tassar yarns, utilizing the cyclic bending hysteresis tester. This study has shown that the fabrics produced from Tassar silk are stiffer compared to Bombyx mori silk, and compared to study done by Mackay [4] on polyester and wool fabrics, silk fabrics have lower bending recovery than polyester fabrics but higher recovery than wool fabrics. A study by Matsudaira & Kawabata [5] concerns with structural and mechanical properties of silk fabrics. It has been demonstrated that the gap existing between warp and weft yarns of these fabrics is responsible for the good handle. Nakta et al. [6] have suggested a method to predict hand values of silk and light weight fabrics from eight processing factors. Yang et al. [7] have shown that the hand of spun bonded silk can be precisely measured by Kawabata evaluation systems for fabrics. Hadimani et al. [8] have conducted a study on polyester/silk blended fabrics and reported properties such as tensile strength, crease recovery, abrasion resistance, drape co-efficient and pilling tendency of fabrics with varying percentages of polyester and silk.The effect of dry as well as wet thermal process on silk has been studied by a number of workers. The changes in surface structure and physical properties due to heat treatment of Bombyx mori silk at 100-160˚C in air, both loaded and unloaded states, for 2-8 hours have been reported by Kuwahara [9]. It has been observed that with increase in heat –treating temperature, thin layers and porous structure develop and gradual deterioration occurs at 120˚-140˚C, which is more severe in unloaded than in loaded fibres. Yasuo & Masazoshi [10] have subjected the silk fibres to 100-225◦C dry heat and determined the changes in aggregating structure. They have reported that the tensile strength, Young's modulus and flexural rigidity of fibres slightly increase when subjected to heat treatment at 150◦C due to the partial change of molecules in the amorphous region to a β-structure whereas treatment at 175◦C decreased these mechanical properties because of the decrease in crystallinity and orientation. Heating beyond 225˚C resulted in complete deterioration of the fibre. Hagiwara et al. [11] have studied the effects of wet thermal treatment at 100-130˚C for 10-60 minutes on the physical properties of raw silk and fine structure of degummed silk. It has been reported that the elongation of raw silk treated at 100˚C and 110˚C for 10 minutes resulted in 1% increase in elongation without changes in strength and Young's modulus due to the breaking of inter-molecular partial by water.

3.COMFORT PROPERTIES OF SILK FABRIC

Ron Postle & Gu Ping [12] applied the technology of objective fabric measurement was applied to pure silk fabrics of different qualities of woven fabrics such as satin, twill etc.. The weight of the fabric ranging from 21 to 82 g/m2. The instrumentally measured properties of the finished silk fabrics are discussed in terms of fabric weight, thickness, tensile properties shear, bending, compression, surface friction and surface geometry. The mean values of these low stress mechanical and surface properties for finished pure silk fabrics are reported. Sharma et al. [13] studied the tensile, bending, shearing, compressional and surface properties of mulberry and Tassar silk fabrics have been studied to investigate their hand values. Using the data obtained, the quality characteristics of mulberry and Tassar silk fabric have been objectively evaluated and then compared. It is observed that mulberry silk fabric is better in terms of shear. stiffness, bending rigidity, geometrical roughness, hand values and draping behaviour, but possesses lower compressional resilience as compared to Tassar silk fabric. Uraiwan Ninpetch [14] investigated the mechanical properties of silk fabric in which the silk yarn from Thai hybrid multivoltine Bombyx mori was degummed with commercial grade bromelain and with sodium carbonate. 96.58% of sericin content was removed from the silk yarn in small scale degumming procedure with 2 g/L bromelain and 91.84 % in large scale degumming with 5 g/L brome-lain. According to the evaluation of its mechanical properties using Kawabata Evaluation System for Fabric, the silk fabric degummed with bromelain showed good tensile strength, better response to bending deformation, higher flexibility, smother feel during bending, and softer and better elastic proper-ties during compression. Nayak et al. (2009) [15] studied the effect of polyester content, pick density and weave on the thermal comfort and tactile properties of polyester/viscose blended yarn fabrics have been studied by measuring the low stress mechanical properties on Kawabata evaluation system. It was found that the fabric with higher polyester content give higher total handle value and higher thermal insulation., but however lower air permeability and lower moisture vapour transfer. The fabric with higher polyester content also shows lower extensibility in warp direction. Pramanik & Vilas Patil [16] (studied the low stress mechanical properties of apparel fabrics prepared from different types of cotton/nylon (sheath/core) yarns produced by using ring spinning and air jet spinning have been compared and their fabric properties were studied. For the study nylon yarn of 30,44 and 70 deniers were used to prepare cotton/nylon (sheath/core) yarns with the proportions 85/15, 75/25, 60/40 in both spinning systems. The yarn converted to fabric using plain weave structure. The fabric tested using Kawabata evaluation system and the results compared with the fabric produced with 100% cotton. It was observed that the fabric stiffness increases with the increase in synthetic filament part in sheath/core yarn irrespective of the spinning process. The total hand value increases when the filament percentage in the core material increased. Radhalakshmi et al.[17] made some modifications to the simple conventional method for determining low- stress mechanical properties of fabrics to make it applicable for finished silk fabrics. The bending rigidity of the fabrics has been obtained from the tensile stress strain curves and the shear rigidity by bias extension. The results obtained by the new method shows a good correlation to the results obtained by Kawabata evaluation test method and is found good for a series of finished silk fabrics. Fabio Rombaldoni et al. [18] investigates the physical, low-stress mechanical and surface properties of untreated fabrics, untreated fabrics conventionally dyed at 98°C, and plasma-treated fabrics dyed at 85°C, were measured using Kawabata’s Evaluation System for Fabrics. In particular, there were significant increases in bending and shearing characteristic values for plasma treated fabrics dyed below the boil (85°C). Moreover, subjective hand tests highlighted that these fabrics were stiffer and crisper than the other two types of fabric, thus confirming the results of objective measurements. Fabrics produced from 100% linen and their blends with cotton and viscose have been studied for handle and comfort properties by Behera [19]. Linen fabrics produce excellent aesthetic and drape properties. Linen fabrics are found to be tougher than cotton and other blends. However, linen offers the highest tensile resilience and the lowest friction coefficient under low stress-loading conditions. Linen fabric produces superior primary hand with respect to Fukurami and Shari. The Total Hand Value (THV) of processed linen fabric is higher than that of cotton fabric as a summer wear. The blending of viscose and cotton improves the hand value of linen fabric.

4. ERI SILK FABRIC PROPERTIES

B. Senthil Kumar et.al [20] in their study, two different knit structures, namely, single pique and honeycomb fabric, were developed with the combinations of two different tightness values of slack and tight by using 2/80s Nm and 2/140s Nm eri silk yarns. The developed fabrics were analyzed for vertical wicking, moisture management properties such as wetting time, spreading speed, absorption rate, maximum wetting radius, accumulative one-way transport index (AOTI), and overall moisture management capacity (OMMC). Variables such as yarn linear density, tightness, and knitting structure have a significant influence on the wicking and moisture management properties.

The overall OMMC indices of eri silk knitted fabric lie in the ‘very good’ to ‘excellent’ category, indicating the suitability of eri silk yarn for skin fit as well as active wear applications. Balakrshnan Senthil Kumar et.al [21] in their research work found that Eri silk, a wild silk variety available in the northeastern states of India, has better softness, tensile and thermal properties. The present study aimed to develop different knitted structures and investigate the influence of knitting process variables on the thermal comfort and wicking properties. Knitted single jersey and single pique fabric structures were produced with two sets of yarns – 25 tex and 14.32 tex with three levels of loop length. Thermal properties of the fabric were analysed using an Alambeta instrument, and the wicking ability was measured with an vertical wicking tester. Thermal comfort properties of eri silk were also compared with those of conventional mulberry silk, with the experiment result revealing that eri silk has better comfort values. A statistically significant correlation is found between knitting process parameters viz. the yarn count, loop length knitting structure and the thermal and wickability values of the fabrics. Rungsima Chollakup et.al [22] states that the Eri cocoons were prepared into short fibers and subsequently blended with cotton fiber in order to develop the new fiber blended yarn in the short spinning system. The Eri and cotton fibers were blended using the drawframe blending with varying blending factors, viz. blending composition (0–100%) and yarn counts (30 and 50 tex). The results showed that Eri fiber which was longer and stronger than cotton fiber, affected the fiber distribution in the yarn cross-section. The mechanical properties of the blended fibers and yarns increased with increasing silk content. Longer fibers of Eri silk tended to move towards the yarn core, especially at silk content higher than 50%. Moreover, stronger and more extensible Eri silk fiber gave an advantage to the improvement of mechanical properties of those blended yarns with silk content higher than 50%. However, with increasing silk content, the blended yarns were more irregular as shown in %CV. Concerning the yarn count effect, the higher yarn count of 50 tex resulted in a more regular yarn with higher yarn strength than that of 30 tex. The plain-woven fabrics were prepared using the blended yarns as a weft yarn and the cotton yarn or silk yarn as a warp yarn. The mechanical properties of those woven fabrics were characterized in order to study the influence of silk contents. The results showed that tensile strength, %elongation and tear strength of woven fabrics using the blended yarn were increased with an increase in silk content. This is an advantage of Eri silk in the aspect of rendering strength to the blended yarns and fabrics. Brojeswari Das et.al [23] found that the thermal comfort properties of eri silk, mulberry silk, wool and linen fibres have been studied in this article. Four types of fabrics were made by using spun yarns of eri silk, mulberry silk, wool and linen fibres in weft direction and polyester multifilament yarn in warp direction. Thermal comfort properties of these fabrics have been studied by measuring the air permeability, moisture absorption, thermal and moisture transmission through the fabrics. It is observed that the linen fabrics have the highest air permeability, followed by wool and then silk fabrics. The lowest air permeability properties of eri and mulberry silk are found to significantly influence the thermal behaviour of silk samples. The results emphasize that the eri silk and mulberry silk samples with high thermal absorbency, wickability, moisture absorbency and very good water vapour permeability coupled with low thermal resistance are suitable for summer wear clothing and at the same time these samples also possess very low air permeability and very good water vapour permeability signifying their appropriateness as thermal wear for windy conditions.

4. ERI SILK PROPERTIES

Eri silk, also known as Endi silk or Errandi silk, is a type of silk produced by the caterpillar of the Samia ricini, a species of silk moth native to parts of India, China, and other Southeast Asian countries. Unlike other types of silk, such as mulberry silk produced by the Bombyx mori silkworm, Eri silk is produced from the open-ended cocoon of the Eri silkworm.

Source: Eri silk is mainly produced in regions of India, particularly in the northeastern states such as Assam, Meghalaya, and Nagaland, as well as in some parts of China and other Southeast Asian countries.

Cocoon: The cocoon of the Eri silkworm is unique in that it has an open-ended structure. This means that the pupa of the silkworm is not killed or boiled within the cocoon during the harvesting process, which is different from the methods used for other types of silk.

Ethical Production: Eri silk is often referred to as "peace silk" or "ahimsa silk" because the pupa is allowed to emerge from the cocoon naturally, unlike in conventional silk production where the pupa is killed to obtain a continuous silk thread. This ethical approach makes Eri silk a popular choice for those concerned about animal welfare.

Texture and Appearance: Eri silk has a textured, slightly nubby appearance and a natural off-white color. The fabric produced from Eri silk has a unique texture that is often compared to wool. It is also known for its thermal properties, providing warmth in colder temperatures and breathability in warmer weather.

Uses: Eri silk is used to create a variety of textiles and garments, including traditional Indian clothing such as sarees, shawls, and dhotis. It is also used for modern fashion designs, home textiles, and interior decorations.

Dyeing and Blending: Eri silk can be easily dyed, and it takes on vibrant colors well. It is also often blended with other fibers, such as cotton or wool, to create fabrics with enhanced properties.

Sustainability: Eri silk production is generally considered more environmentally friendly than conventional silk production methods, as it involves less harm to the silkworm and allows the moth to complete its life cycle. Additionally, Eri silkworms feed on leaves of castor plants, which are relatively easy to cultivate.

4.1 PROPERTIES OF ERI SILK FIBER

Texture and Appearance: Eri silk has a slightly nubby and textured appearance, often compared to wool. This texture adds depth and character to fabrics made from Eri silk.

Thermal Regulation: Eri silk has excellent thermal properties, providing warmth in cold temperatures and maintaining breathability in warmer conditions. This makes it suitable for clothing that can be worn in diverse weather conditions.

Comfort: The softness and warmth of Eri silk make it comfortable to wear directly against the skin. It is often used to create garments like shawls, scarves, and innerwear.

Dyeability: Eri silk readily accepts dyes, resulting in vibrant and long-lasting colors. This dyeability makes it versatile for various design and fashion applications.

Hygroscopic Nature: Eri silk is hygroscopic, meaning it can absorb moisture from the surrounding environment, helping to keep the wearer dry and comfortable.

Biodegradability: Eri silk is a natural fiber and is biodegradable, making it an environmentally friendly choice compared to synthetic fibers that take longer to break down.

Non-Allergenic: Eri silk is non-allergenic and is less likely to cause skin irritations or allergic reactions, making it suitable for sensitive skin.

Blendability: Eri silk can be easily blended with other fibers, such as cotton, wool, or synthetic fibers, to create textiles with enhanced properties. Blending can help improve durability, texture, and overall performance.

Ahimsa Silk: Eri silk is often referred to as "peace silk" or "ahimsa silk" due to its ethical production methods. The pupa is allowed to emerge from the cocoon naturally, resulting in a more humane silk production process compared to conventional silk production.

Renewable Resource: Eri silkworms feed on castor leaves, which are a fast-growing and renewable resource. This contributes to the sustainability of Eri silk production.

Insulating Properties: Due to its natural insulation, Eri silk can help regulate body temperature, keeping the wearer warm in cold weather and cool in warm weather.

Versatility: Eri silk can be woven, knitted, or blended with other fibers to create a wide range of textiles, including garments, accessories, home textiles, and interior decorations.

4.2 PHYSICAL PROPERTIES OF ERI SILK FIBER

Length and Diameter: Eri silk fibers have a range of lengths and diameters, which can vary depending on factors such as the rearing conditions of the silkworms and the processing techniques used. On average, Eri silk fibers are coarser and shorter compared to traditional mulberry silk fibers.

Texture: Eri silk fibers have a textured and slightly nubby appearance, resembling wool to some extent. This texture contributes to the unique tactile experience of fabrics made from Eri silk.

Color: Eri silk fibers are naturally off-white or creamy in color, which gives the resulting textiles a warm and natural appearance. The natural color of Eri silk makes it easy to dye in a wide range of shades.

Strength: Eri silk fibers possess reasonable strength, although they are generally not as strong as mulberry silk fibers. The strength of Eri silk can be influenced by factors like the silkworm's diet, environment, and the processing techniques used.

Elasticity: Eri silk fibers have a moderate degree of elasticity, which contributes to their comfort and wearability. This property allows fabrics made from Eri silk to stretch slightly without losing their shape.

Density: The density of Eri silk fibers is generally lower than that of mulberry silk. This can contribute to the lightweight feel of fabrics made from Eri silk.

Thermal Properties: Eri silk is known for its excellent thermal regulation properties. It provides warmth in cold temperatures and maintains breathability in warm conditions, making it suitable for a variety of climates.

Absorbency: Eri silk fibers are hygroscopic, meaning they can absorb moisture from the surrounding environment. This property helps keep the wearer dry and comfortable.

Biodegradability: Eri silk is a natural fiber and is biodegradable, which aligns with sustainable and environmentally friendly practices.

Non-Allergenic: Eri silk is generally considered non-allergenic and is less likely to cause skin irritation or allergic reactions.

Blending: Eri silk can be easily blended with other fibers, such as cotton, wool, or synthetic fibers, to enhance its properties. Blending can influence factors like texture, strength, and color.

Aesthetic Value: The unique texture and appearance of Eri silk fibers contribute to the aesthetic appeal of fabrics made from this silk. It adds depth and character to clothing and textiles.

Insulating Properties: Eri silk's natural insulation capabilities contribute to its ability to help regulate body temperature, making it suitable for various weather conditions.

4.3 THERMAL PROPERTIES OF ERI SILK WOVEN FABRIC

Eri silk woven fabric possesses distinct thermal properties that make it suitable for various weather conditions. These properties are influenced by the natural characteristics of Eri silk fibers, as well as the weaving structure of the fabric. Here's how Eri silk woven fabric exhibits thermal properties:
Insulation: Eri silk woven fabric is known for its excellent insulation properties. The texture of Eri silk fibers and the structure of the fabric create tiny air pockets within the material. These air pockets act as thermal insulators, trapping warm air close to the body in cold temperatures and providing an extra layer of warmth.
Thermal Regulation: Eri silk woven fabric has the ability to regulate body temperature. In cold weather, the insulating properties of the fabric help retain body heat, keeping the wearer warm. Conversely, in warmer conditions, the fabric's breathability allows excess heat and moisture to escape, helping to maintain a comfortable body temperature.

Breathability: Eri silk fibers are hygroscopic, meaning they can absorb moisture from the body and the environment. This moisture-wicking property allows the fabric to keep the skin dry by pulling moisture away from the body and releasing it into the air. This breathability contributes to comfort, especially in warmer conditions.
Comfort in Layering: Due to its insulating and breathable qualities, Eri silk woven fabric can be comfortably layered with other garments. It provides warmth without causing overheating, making it suitable for both inner and outer layers of clothing.
Adaptability: Eri silk woven fabric's ability to adapt to changing weather conditions makes it versatile. It can be worn in both cold and warm climates, making it a suitable choice for year-round clothing.
Moisture Management: Eri silk woven fabric's moisture-wicking properties also help manage sweat and moisture during physical activities. It can help keep the body dry and comfortable, reducing the risk of chills due to damp clothing.
Lightweight and Bulk: Eri silk woven fabric is generally lightweight and has a relatively low bulk compared to other insulation materials. This makes it an attractive choice for creating warm clothing without adding excessive weight or bulk.
Dye Retention: The dye retention properties of Eri silk fibers also extend to the fabric. Dyed Eri silk woven fabric maintains its vibrant colors even after multiple washes, making it visually appealing and long-lasting.

4.4 END USES OF ERI SILK WOVEN FABRIC

Traditional Attire: Eri silk woven fabric is often used to create traditional clothing such as sarees, shawls, and dhotis. Its luxurious texture, vibrant colors, and comfortable feel make it an excellent choice for special occasions and cultural events.

Casual and Formal Clothing: Eri silk woven fabric is used to craft a range of casual and formal clothing items, including dresses, blouses, tops, skirts, and jackets. Its comfort properties, versatility, and elegant appearance make it suitable for various fashion styles.

Accessories: Eri silk woven fabric is popular for accessories like scarves, stoles, and ties. Its lightweight nature and softness against the skin make it a comfortable option for accessories that can be worn year-round.

Home Textiles: Eri silk woven fabric is used for creating home textiles such as curtains, drapes, cushion covers, and tablecloths. Its unique texture and natural colors contribute to a warm and cozy atmosphere.

Bedding: Eri silk woven fabric is occasionally used for luxury bedding items like bedspreads, duvet covers, and pillowcases. Its thermal regulation properties contribute to a comfortable sleep environment.

Lingerie and Loungewear: Eri silk woven fabric's softness and hypoallergenic properties make it suitable for intimate apparel such as bras, panties, camisoles, and pajamas.

Innerwear: Eri silk woven fabric is used to create comfortable and breathable innerwear for both men and women. Its moisture-wicking and thermal properties contribute to a pleasant wearing experience.

Fashion Accessories: Eri silk woven fabric is used in crafting various fashion accessories like handbags, clutches, and belts. Its distinctive texture adds a unique touch to these accessories.

Ethical and Sustainable Fashion: Eri silk's ethical production methods, including allowing the silkworm to complete its life cycle, align with the principles of sustainable and ethical fashion. This makes it an attractive choice for those seeking environmentally conscious clothing options.

Artisanal and Handcrafted Items: Eri silk woven fabric is often used by artisans and designers to create one-of-a-kind items like wall hangings, art pieces, and handcrafted garments.

Modern Apparel: Eri silk woven fabric is increasingly finding its way into modern fashion designs, including contemporary dresses, blouses, skirts, and other garments. Its unique blend of texture and comfort appeals to fashion-forward consumers.

Apparel for All Seasons: Eri silk woven fabric's thermal regulation properties make it suitable for clothing that can be worn in various weather conditions. It provides warmth in cold weather and breathability in warm weather.

5. CONNCLUSION

Eri silk, also known as "Ahimsa silk" or "peace silk," is a type of silk produced from the cocoons of the Eri silkworm (Philosamia ricini), a domesticated silk moth. Unlike traditional silk production, where the pupa is killed inside the cocoon during processing, Eri silk is produced in a more ethical and humane manner. The pupa is allowed to emerge from the cocoon naturally before the silk is harvested, making it a more sustainable and cruelty-free option. Eri silk is known for its unique texture and is often used in the production of fabrics, garments, and textiles.
In recent years, Eri silk has gained attention for its ethical production practices, distinctive texture, and suitability for various clothing and textile applications. It offers an alternative to conventional silk and provides economic opportunities for communities involved in its production. Eri silk's unique combination of texture, comfort, thermal properties, and ethical production methods has contributed to its growing popularity in the fashion and textile industry. It offers consumers an environmentally conscious and socially responsible choice when it comes to silk products. Eri silk's physical properties make it a versatile and sought-after material for a range of textile applications, including clothing, accessories, and home textiles. Its unique texture, comfort, and ethical production methods contribute to its popularity in both traditional and modern fashion contexts. Eri silk woven fabric's thermal properties stem from its unique fiber texture, the weaving structure used, and the fabric's ability to regulate heat and moisture. These properties contribute to its popularity for creating garments suitable for various climates and activities. , Eri silk woven fabric's comfort properties make it a sought-after choice for individuals seeking clothing that not only looks elegant but also provides a comfortable and pleasant wearing experience.

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