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Chenille Yarn Production Parameters Improvement Studies and Evaluation of Their Effects

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Abstract

Chenille yarn has an increasing share of use in the upholstery fabric sector recently. To have an important place in chenille yarn production in the world, it has become necessary for manufacturers to improve the quality, durability, and performance of their products and to carry out innovative studies in this field. Increasing the abrasion resistance of the yarns that form the basis of upholstery fabrics will significantly affect the service life performance. In this study, two raw materials selected with different production parameters were examined. These raw materials are determined as viscose and polyester, which are mostly used for chenille yarn in the production facility. The parameters covered in this study are determined and evaluated as the fixed/unfixed state of the yarn, the state of having different twist values, and the presence or absence of melted yarn added to ensure better adhesion of the pile and binder yarn with each other. In this direction, to test the abrasion resistance of the yarns produced from 6 polyester raw materials and 6 viscose raw materials with different properties, they are woven into fabrics by weaving on a 65-density jacquard loom. Each fabricated sample is realized by Martindale test. This test is realized to see the result of friction force and impact effect on the fabric surface. Also, it is aimed to determine the resistance of the samples against pilling and surface change. Based on the results, different parameters affecting the abrasion resistance of upholstery fabrics obtained from chenille yarn were interpreted and it was aimed to be a pioneering study in this field.

Keywords: Chenille yarn, Upholstery fabric, Abrasion, Durability, Energy efficient yarn, Textile industry

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Şönil İplik Üretim Parametreleri İyileştirme Çalişmalari ve Etkilerinin Değerlendirilmesi

Öz

Şönil iplik döşemelik kumaş sektöründe son zamanlarda artan bir kullanım payına sahiptir. Şönil iplik üretiminde dünyada önemli bir yere sahip olmak için üreticilerin ürünlerinin kalitesini, dayanıklılığını ve performansını iyileştirmeleri ve bu alanda yenilikçi çalışmalar yapmaları gerekli hale gelmiştir. Döşemelik kumaşların temelini oluşturan ipliklerin aşınma direncinin arttırılması kullanım ömrü performansını önemli ölçüde etkileyecektir. Bu çalışmada farklı üretim parametreleri ile seçilen iki hammadde incelenmiştir. Bu hammaddeler, üretim tesisinde çoğunlukla şönil ipliği için kullanılan viskon ve polyester olarak belirlenmiştir. Bu çalışmada ele alınan parametreler, ipliğin sabit/sabit olmayan durumu, farklı büküm değerlerine sahip olma durumu ve hav ile binder ipliğin birbirine daha iyi yapışmasını sağlamak için erimiş ipliğin varlığı veya yokluğu olarak belirlenmiş ve değerlendirilmiştir. . Bu doğrultuda, farklı özelliklere sahip 6 polyester hammaddesi ve 6 viskon hammaddesinden üretilen ipliklerin aşınma direnci test edilmek üzere 65 densite jakarlı tezgâhta dokunarak kumaş haline getiriliyor. Üretilen her numune Martindale testi ile gerçekleştirilir. Bu test, sürtünme kuvvetinin sonucunu ve kumaş yüzeyindeki darbe etkisini görmek için gerçekleştirilir. Ayrıca numunelerin boncuklanma ve yüzey değişimine karşı direncinin belirlenmesi amaçlanmaktadır. Elde edilen sonuçlara göre şönil iplikten elde edilen döşemelik kumaşların aşınma direncine etki eden farklı parametreler yorumlanmış ve bu alanda öncü bir çalışma olması amaçlanmıştır.

Anahtar Kelimeler: Şönil iplik, Döşemelik kumaş, Aşınma, Dayanıklılık, Enerji verimli iplik, Tekstil sektör

1. INTRODUCTION

With the increase in competition with the volume of production and employment day by day, the importance of correct production, quality product, quality of workforce, timely meeting of customer demands, and R&D activities in the textile sector has increased. In the face of these increasing values, it has become inevitable to innovate and produce new products.

Upholstery fabrics have a privileged place in home textiles, which is the most important part of the textile products produced in Turkey and the world. While the customers want the upholstery fabrics, they use to have a pleasant appearance in terms of design, they expect it to be used for long periods. Therefore, manufacturers who want to ensure continuity in the sector should prioritize durable and aesthetic parameters in their products. Regarding these needs, the use of new materials for the yarns that form the basis of the upholstery fabric sector or the more effective use of existing materials has been preferred. Upholstery fabrics are expected to have high abrasion resistance, high seam slips endurance, good light, dry, and friction fastness, while it is expected to be resistant to stains and staining and have low rates during the shedding. Upholstery fabrics used in home textiles can be obtained from many raw materials on a natural or chemical basis, depending on their usage areas and expected performance characteristics. Natural raw materials; cotton, wool, cashmere, mohair, linen, hemp, angora, camel hair, silk, ramie, and jute, while chemical raw materials are; polyester, polyacrylonitrile, nylon, acrylic, viscose, bamboo, acetate, rayon, and tencel. Those that are widely used in upholstery fabrics in textiles can be listed under 4 main headings as plain textured fabrics, knitted fabrics, flocked fabrics and chenille fabrics. Chenille yarn, which is used in all areas of home textiles, especially in woven fabrics, stands out compared to other fabrics with its pleasant and voluminous appearance. Chenille yarns are produced from Viscose, Cotton, Viscose/Cotton, Acrylic, Polyester fibers and their blends in the range of Nm 0.5 to Nm 8. It is also colored as skein dyeing and coil dyeing. The chenille yarns produced are offered to customer service after they become carpet or upholstery fabric. The main subject of this study is the fact that in these products used by customers, the yarn called pile, which gives the yarn a puff appearance, sheds over time, and has low abrasion resistance, and the chenille yarns used in upholstery remain bald in the future.

Fancy yarns are special yarns that have stages such as spinning, twisting, wrapping, texturing, printing and knitting. Since fancy yarns do not have any alternatives in the sector, they are always up-to-date. The interest in yarns with different structures or optical effects is due to their aesthetic structure and decorative appeal. Considering these features, one of the most striking among fancy yarns is chenille yarns. Considering the general structure of chenille yarn, consists of two basic components. One of these two basic structures is pile yarn and the other is binder yarn (Figure 1). Binder yarn is the thin and durable thread that passes through the center of the yarn while creating the chenille yarn. Yarns that are cut short or formed from filament yarn constitute pile yarn. Pile yarns placed one after the other form certain fringes by taking their place between the tie yarn.

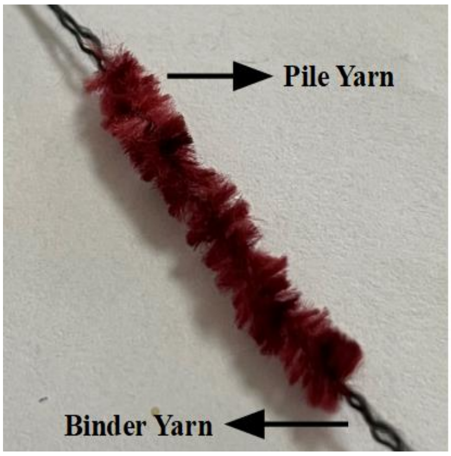


Figure 1. Chenille yarn structure

2. PREVIOUS STUDIES

Chenille yarns used in upholstery fabric production are generally obtained from cotton, acrylic, polypropylene and polyester fibers. The effective factors in choosing chenille yarn are their properties. The most important of these features is that chenille yarn creates a velvety appearance by reflecting the light in different directions thanks to its pile surface. In addition, the ease of production and low cost of chenille yarn have also provided an advantage in its widespread use.

Chenille yarn can be produced from dyed yarns or it can be dyed finished. However, chenille yarns are generally produced from dyed yarns, since it is a very preferred situation to apply the dyeing process after the chenille is in the form of yarn. Because it is very difficult to homogeneously dye the pile and binder yarns that make up the chenille yarn separately [1]. The reason for this is that pile and binder yarns are often obtained from different yarn types.

The selection of raw materials in the production and appearance of chenille yarn, the numbers of the main components of pile and binder yarns, the pile length and density, and the number of twists (t/m) are important factors. A velvety shiny appearance is created when the pile yarns lie in a certain direction. To preserve this appearance, there must be no pile loss. The factor that causes the pile yarns to shed is the friction force between the pile yarns and the binder yarns [2].

Chenille yarn is preferred because of its bright appearance, plump appearance, pile surface, low drape, and being economical and easy to manufacture. Despite these positive features, there are also negative features of chenille yarn. These are listed as low abrasion resistance, pile shedding, and pile direction. Considering these properties of chenille yarn, it is seen that many studies have been done about it.

Kalaoglu and Demir (2001) studied abrasion resistance and seam slippage for upholstery chenille fabrics in their study. As a result of their experimental study, they determined that the material and twist of the yarn affect the abrasion resistance, while they determined that the fabric design and construction also affect the seam slippage. In short, they concluded that as the twist of the chenille yarn decreases, the wear increases [3].

Ulku, Ortlek and Omeroglu (2003) produced three different acrylic chenille yarns with 0.7, 0.8- and 1.0-mm diameters with three different twist levels. Produced samples were used in weaving constructions in the form of weft yarn. Afterward, they were tested in a Martindale abrasion test device to observe the abrasion resistance of the samples. Ulku et al. showed that pile length and woven constructions have a significant effect on abrasion resistance [4].

Nergis and Candan (2004) evaluated the dimensional, physical and appearance properties of knitted fabrics obtained from chenille yarns, based on the number of bond yarns, pile length, dry cleaning and washing parameters. In their experimental study, they concluded that the dimensional behavior of knitted fabrics is affected by the washing and dry-cleaning process. They also determined that pile length significantly affects the abrasion resistance of burnt and dry-cleaned fabrics. They mentioned that the bursting strength depends on the properties of the binder yarn. They have seen that as the binder yarn gets thinner, the bursting strength decreases, and as the binder yarn number and the length of the pile yarn get longer, surface properties such as softness, smoothness and brightness improve [5].

Ozdemir and Ceven (2004) produced Nm4 and Nm6 chenille yarns in two different twists and two different pile lengths and turned them into upholstery fabrics. With these chenille yarn samples, they discussed the effect of production parameters on the abrasion resistance of yarn and upholstery fabrics. They determined that the material, yarn twist and pile length affected the abrasion resistance of both fabric and yarn. They found that yarns with a high twist and pile length had less wear. They also determined that chenille upholstery fabrics showed the same properties as chenille yarns and showed a relationship between yarn abrasion resistance and fabric abrasion resistance [6].

Ilhan and Babaarslan (2005) conducted a study in which they examined the effect of pile yarns against abrasion resistance in upholstery fabrics woven from chenille yarns. Within the scope of this study, they produced two different yarn counts, Ne 20/1 and Ne 24/1, as Open-End and Ring pile yarn. They subjected these samples to the Martindale abrasion test. As a result of this test, the samples with Ring pile yarn lost less mass than the samples with Open-End pile yarn [2].

In this study on chenille yarn, about which there are many studies in the literature, the chenille yarn produced as an upholstery fabric has been emphasized. To solve this problem, a third soluble material was added between the pile and binder yarns, which will increase the resistance against friction. In addition to the effects of this material, fixation and twist number parameters were also changed and their effects were investigated. Thus, the effective factors in making the chenille yarn more durable, long-lasting and useful were evaluated [7-8].

3. MATERIAL AND METHOD

3.1. Chenille Yarn Production

In this study, it has been carried out to examine the abrasion resistance of chenille upholstery fabrics and to improve their quality by changing various parameters. It is planned to be produced to test the yarns as Nm 5 and S twisted. Chenille yarn, which has a special place in upholstery fabrics with its appearance and has a flowchart shown in Figure 3, is produced by a machine with different properties compared to other yarns [9-10]. In this machine, there are four binder yarns and two pile yarns in each section called the head (Figure 2). Machines producing chenille have a head section for both spindles. These sections, called the head, are fed from the creels where the binder yarn and pile yarns are located. The binder yarn and pile yarns are combined to form chenille yarn and are wound on the bobbins with the ring twisting and winding system located at the bottom of the machine.

Figure 2. Chenille Yarn Production

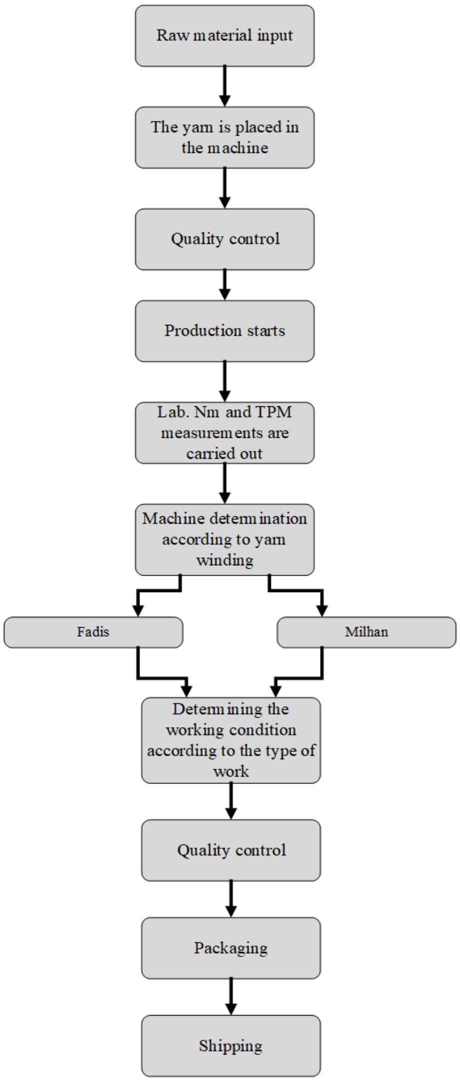


Figure 3. The production process flow chart of chenille yarn

While the production of standard chenille yarn is realized in this way, it is suggested to add a third component, a "melting" material to the chenille yarn produced in this study, in addition to the pile and bond yarns. This variable has been added to prevent pile loss due to friction. In addition, the effect of the number of twists and whether the yarn is fixed or not on the pile loss has been examined in detail.

The melted yarn chosen within the scope of the study has been determined as Polyamide. Polyamide is a polymer containing monomers linked by peptide bonds. This polymer can form both naturally (proteins, wool, silk) and artificially (nylon, kevlar, Sodium poly aspartate). It is used in many sectors such as leather, food, textile, and automotive. In the textile sector, polyamide has inspired us for chenille yarn. The effect of the proposed method on chenille yarn consists of several steps. As shown in Figure 4, the melted yarn is placed between the bond yarn. It is then subjected to the fix process. The melting process takes place, allowing the pile and binder threads to stick together. Thus, with this melted yarn method added, it is aimed to increase the holding effect between pile and binder yarn and to prevent pile loss.

To observe whether the pile and binder yarns have an effect on the holding force to each other, the addition of the melted yarn, the change of twist values, and fixed-unfixed situations have been examined in this study.

Figure 4. Adding fusible yarn to chenille yarn production

Before these examinations, sample yarns produced in Ulusoy Textile have been become fabrics by weaving by Tosunoglu Textile, which cooperated within the scope of the study. Jacquard weaving machines, which have an important place in shedding systems, were used for the weaving process. These machines; It has made it possible to weave complex patterns, pictures, or landscapes, as they can move a large number of warp yarns separately. Jacquard system has a different structure compared to other systems.

In the eccentric dobby system, the warp yarns are moved by the frame groups for the formation of the shed, while in the jacquard system, it is controlled by the harness groups integrated with the plantains for the formation of the shed. Thus, the jacquard system, thanks to its features, allows larger pattern groups to be woven compared to the eccentric and dobby systems [11-12].

The chenille yarn samples, which are prepared considering these features, have been woven into fabric by weaving on the 66-density jacquard loom to determine its performance and strength as a woven fabric (Figure 5).

Figure 5. Weaving machine

In the subsequent fix process; The fabric was passed through the stenter machine shown in Figure 7 at a certain temperature and time (1.5 min). Stenters are machines in which the movement of the fabrics is provided by a pair of walking chains by attaching them from the edges in a transverse manner, and in the meantime, the fabric is dried with the help of hot air. During this process, the desired width and length adjustment can be given to the fabrics. In addition, wrinkles on the individual fabric surface can also be removed. The feature that makes these processes possible is the nozzle system that allows compressed air to be sprayed on the lower and upper surfaces of the fabric. The pressurized and hot air applied from the nozzles turns the water in the fabric into steam. Air containing steam is removed from the fabric by a suction system. As a result of the process, the fabric leaves the machine as dried.

In addition, fibers and dust separated from the fabric by the effect of compressed air during drying are removed from the environment with a special sieve absorber device. There is a cooling system and winding mechanism to prevent excessive drying of the fabric coming out of the stenter after the drying process.

Thanks to this process, the fabric is both dried and the chemicals transferred on it are fixed into the fabric. In addition, thanks to the pre-fix process, the transverse gathering of the fabric in the airo process is prevented.

Figure 6. Stenter machine

After all these processes, the samples are finalized and ready for abrasion tests. The samples taken for the chenille yarn turned into fabric have been tested for abrasion resistance of the fabrics with the TSE EN ISO 12947-1 Martindale method to see the pile loss.

The Martindale test is a physical test used to determine how many cycles or how many hours after a certain force, fiber lumps and pilling occur on fabric surfaces. This test is done to see the result of friction force and its impact effect on the fabric surface. This experiment, it was aimed to determine the pilling resistance and surface change resistance of textile fabrics by using the Martindale device (Figure 7).

Figure 7. Martindale test device

The mass loss status is examined after the Martindale test of the test samples. To determine the mass loss in the test pieces, the test pieces are carefully taken from the gripper guide with the help of forceps. The debris (fiber waste) resulting from abrasion on both surfaces is removed with the help of a soft brush, taking care not to touch the test pieces with the finger. The mass of each test piece is determined in the 1 mg approach after conditioning under standard atmospheric conditions. The mass loss for each test piece is calculated using the precision balance (Figure 8), using the difference between the masses of the test piece before and after the test, using the approximation of 1 mg.

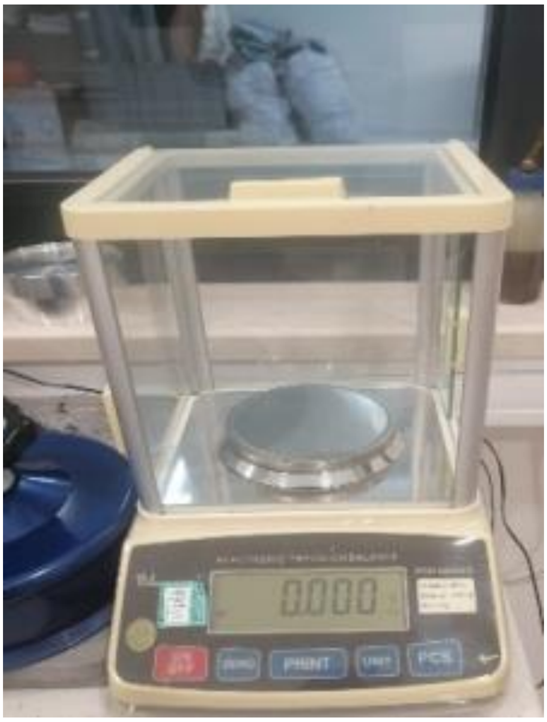


Figure 8. Precision balance

3.2.Selection and Production of Sample Samples

Woven fabrics produced from chenille yarns have a fuller appearance with their yarn structure and pile. Pile density is the most important factor affecting the handle of fabrics produced from chenille yarn. The fuller and more voluminous the fabric become thanks to the higher the pile density. Parameters on which pile density depends, are pile length, pile frequency, and yarn thickness. As the pile length increases, the fabric surface is covered better, while the short pile gives the fabric a denser appearance. The pile frequency is another factor affecting the pile density; It ensures that the pile does not separate from the surface and forms a tighter bond with the ground. As another factor, the increase in yarn thickness causes a coarser appearance on the fabric. For this reason, it should be paid attention that the structure of the fabric does not change in the studies carried out to prevent the pile in the woven fabric from moving away from the fabric surface as a result of mechanical and physical wear due to its use over time.

In this study, which has been performed considering these situations, it is paid attention that the changes made in the selected samples are in such a way that they would not affect the structure of the fabric. While selecting the samples, the raw materials most used in the production of chenille yarn on a facility basis are taken as a result of the evaluations made in the facility where the production will take place and in line with customer requests. Two different raw materials have been determined for the chenille yarns used in the samples. Pile yarn for polyester and polyester as binder yarn has been selected from the raw materials determined (Figure 9). For viscose, viscose was chosen as the pile yarn, and polyester-viscose has been chosen as the binder yarn [13].

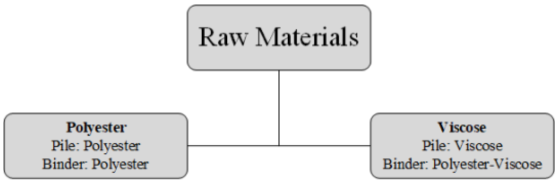


Figure 9. The raw material types

The chenille yarn numbers used in upholstery fabrics are in the range of Nm 4 and Nm 6. For this reason, the chenille yarn produced from the raw materials determined within the scope of this study was determined as Nm 5. The pile length is in line with customer demands; 0.8 mm was the most produced for viscose and 1 mm was the most produced for polyester. After the samples were selected, the yarns produced were woven into fabrics ready for abrasion test, in line with a workflow (Figure 10).

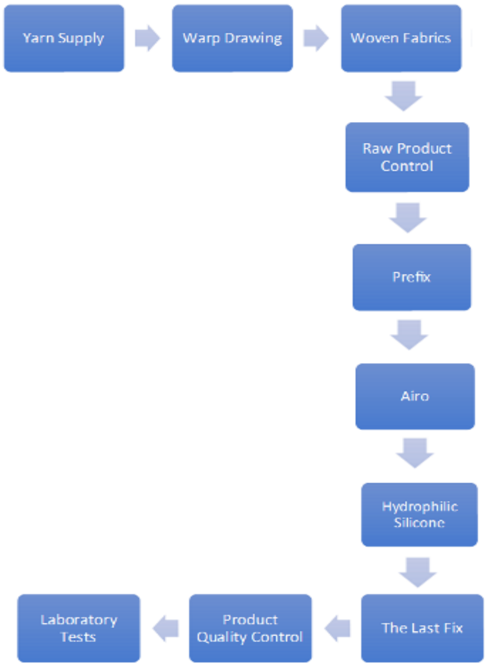


Figure 10. Fabric weaving workflow chart

3.3. Polyester Chenille Fabric Sample

Six main samples were determined for polyester yarn. These samples were produced by changing the parameters as melted and un-melted, fixed and unfixed, 900 and 980 twists. As shown in Table 1, samples were assigned a number and throughout the study process samples were identified with these assigned numbers.

Table 1. Polyester sample properties

No	Raw materials	Yarn	Process
P1.1	Polyester	Melted / 980 twists / Unfixed	180Prefix / AIRO 150/ The last fix
P1.2	Polyester	Unmelted / 980 twists / Unfixed	180 Prefix / AIRO 150/ The last fix
P1.3	Polyester	Unmelted / 980 twists / Fixed	180 Prefix / AIRO 150/ The last fix
P1.4	Polyester	Melted / 980 twists / Fixed	180 Prefix / AIRO 150/ The last fix
P1.5	Polyester	Melted / 900 twists / Fixed	180 Prefix / AIRO 150/ The last fix
P1.6	Polyester	Melted / 900 twists / Unfixed	180 Prefix / AIRO 150/ The last fix

The Martindale abrasion test was applied to polyester samples with different properties, and the results in Table 2 were obtained. To increase the holding force between the pile and bond yarns, the unfixed P1.1 sample with 980 twist, which contains the melted material included in the production process, has the highest break and pile loss cycle and it has been seen that it gives the best results.

The applied Martindale test was created by taking two samples from each sample. The pile loss results of the samples taken after the test are shown in the Abrasion-Martindale (TSE EN ISO 12947-1) Test-1 and Abrasion-Martindale (TSE EN ISO 12947-1) Test-2 columns in Table 3 below.

Table 2. Pile loss and average breakout cycle of polyester chenille yarn as a result of Martindale test

No	**Pile Loss (Cycle)**	**Average Breakout (Cycle)**
P1.1	18.000	31.000
P1.2	15.000	25.000
P1.3	17.000	28.000
P1.4	27.000	29.000
P1.5	5.000	26.000
P1.6	5.000	25.000

Table 3. Appearance and mass loss of polyester chenille yarn Martindale test result

No	**Original**	**Abrasion-Martindale (TSE EN ISO 12947-1) Test-1**	**Abrasion-Martindale (TSE EN ISO 12947-1) Test-2**
P1.1			
P1.2			
P1.3			
P1.4			
P1.5			
P1.6			

Table 3 shows the appearance of the samples as a result of mass losses according to the Martindale test results. According to the results supported by their appearance, 5.9% in P1.1 sample, 5.4% in P1.2 sample, 8.6% in P1.3 sample, 3.3% in P1.4 sample, 0.6% in P1.5 sample and 1.4% in the P1.6 sample occur mass loss. The situation of these losses in mass relative to the original mass is shown in Figure 11.

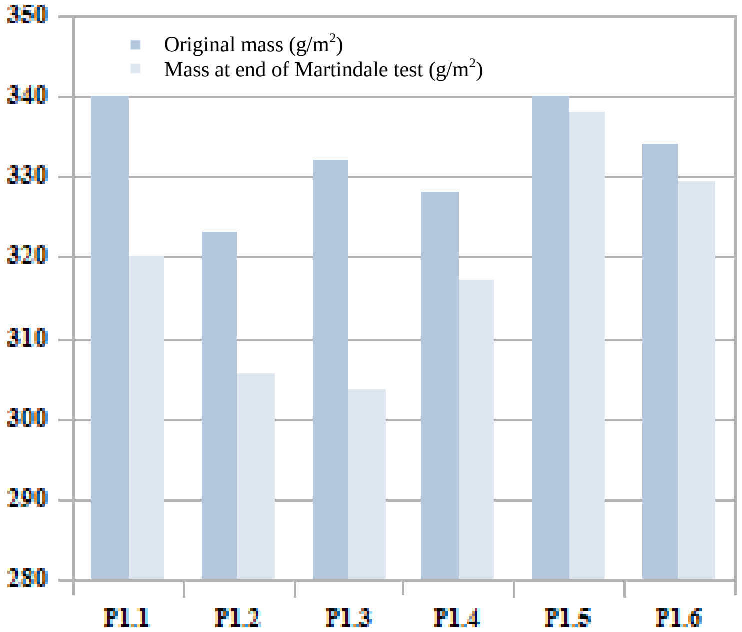


Figure 11. Mass loss for polyester samples

3.4. Viscose Chenille Fabric Sample

As with polyester chenille fabrics, six main samples were determined for viscose chenille fabrics. These samples were determined by changing the parameters as melted and un-melted, fixed and unfixed, 900 and 980 twists. As shown in Table 4, samples were assigned a number and throughout the study process samples were identified with these assigned numbers.

Table 4. Viscose sample properties

No	Raw materials	Yarn	Process
V1.1	Viscose	Melted/900 twists/ Fixed/Yarn Dyed	60 Prefix/AIRO 150/ The last fix
V1.2	Viscose	Melted/900 twists/ Unfixed/Yarn Dyed	60 Prefix/AIRO 150/ The last fix
V1.3	Viscose	Unmelted/980 twists /Unfixed/Yarn Dyed	60 Prefix/AIRO 150/ The last fix
V1.4	Viscose	Unmelted/980 twists /Fixed/Yarn Dyed	60 Prefix/AIRO 150/ The last fix
V1.5	Viscose	Unmelted/900 twists /Unfixed/Yarn Dyed	60 Prefix/AIRO 150/ The last fix
V1.6	Viscose	Unmelted/900 twists /Fixed/Yarn Dyed	60 Prefix/AIRO 150/ The last fix

The Martindale abrasion test was applied to viscose samples with different properties, and the results in Table 5 were obtained. It was observed that the holding force between the pile and bond yarns was better in the unmelted and unfixed V1.3 sample with 980 twists, and it was determined that this sample gave the highest result in the breakage and pile loss cycle. As seen in Example 3 and Example 4, it was observed that the pile losses of 980 twisted samples were lower. Thus, it was concluded that with the increase in the number of twists, the binder yarns hold the pile yarns stronger and this prevents wear.

Table 5. Pile loss and average breakout cycle as a result of viscose chenille yarn Martindale test

No	Pile loss (Cycle)	Average breakout (Cycle)
V1.1	2.500	8.500
V1.2	2.000	10.000
V1.3	10.000	24.000
V1.4	9.000	23.000
V1.5	3.250	23.000
V1.6	2.000	15.000

The Martindale test applied for viscose chenille woven fabric was created by taking two samples from each sample as it was for polyester chenille fabric. The pile loss results of the samples taken after the test are shown in the Abrasion-Martindale (TSE EN ISO 12947-1) Test-1 and Abrasion-Martindale (TSE EN ISO 12947-1) Test-2 columns in Table 6 below.

Table 6. Viscose chenille yarn appearance and mass loss as a result of Martindale test

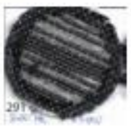
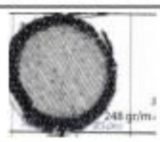
No	Original	Abrasion-Martindale (TSE EN ISO 12947-1) Test-1	Abrasion-Martindale (TSE EN ISO 12947-1) Test-2
V1.1			
V1.2			
V1.3			
V1.4			
V1.5			
V1.6			

Table 6 shows the appearance of the samples as a result of mass losses according to the Martindale test results for viscose chenille fabric. According to the results supported by their appearance, the resulting mass losses were 11.9% in the V1.1 sample, 19.4% in the V1.2 sample, 9% in the V1.3 sample, 18.6% in the V1.4 sample, and % in the V1.5 sample. 19 and 24% in the V1.6 sample. The situation of these losses in mass relative to the original mass is shown in Figure 12.

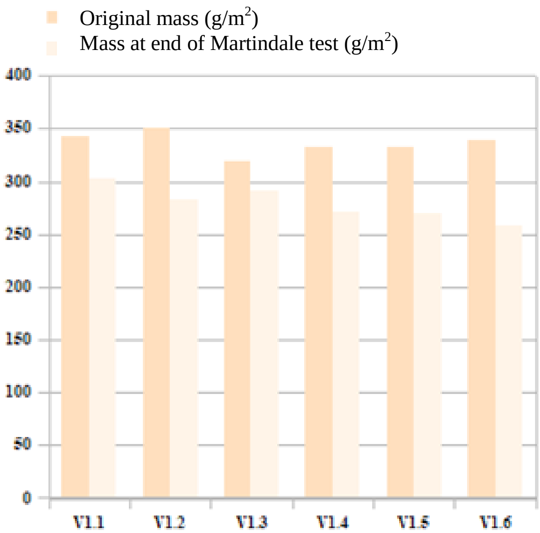


Figure 12. Mass loss for viscose samples

4. CONCLUSIONS AND RECOMMENDATIONS

Chenille yarns, which were used effectively in the 1990s, are among the most widely used fancy yarns in upholstery fabrics today. Despite its use for many years, studies on chenille yarns have been limited. However, over time, it has become necessary to carry out studies on these yarns, which are used as upholstery fabrics in home textiles [14]. In this study, which is aimed to be a source for future research, pile loss, which is the most important problem encountered in woven fabrics produced from chenille yarn, is discussed.
Polyester and viscose raw materials, which are the most produced based on the facility and required to be improved in line with customer demands, were selected. While pile and bond yarns for polyester are selected from polyester; For viscose, pile yarn was chosen as viscose and bond yarn as polyester-viscose. Pile lengths were chosen as 0.8 mm for viscose and 1 mm for polyester. To see and improve the factors affecting the pile loss in the selected yarns, some parameters were determined and six pieces were produced for each raw material in line with these parameters. These parameters are discussed whether or not there is a fixation, which is frequently applied in yarn production, the situation of being produced as 900 or 980 twists, and finally, whether or not melted material is added as a yarn improvement study. While determining these conditions, special attention was paid not to changing or affecting the structure of the yarn and fabric.

The yarns produced were turned into fabric by weaving. First of all, pre-fixing was done to prevent the fabric from gathering transversely during the airo process. In the subsequent airo process, surface smoothness is also ensured while drying. With the last fixation, the chemicals transferred to the fabric surface are fixed while the final appearance of the fabric is given.

The chenille fabric, which took its final shape as a result of these processes, was subjected to the Martindale abrasion test in order to see the effect of the changed parameters on the pile loss. One of these parameters is to add melted yarn to the chenille yarn production stage. The purpose of adding the melted yarn is to be between the pile and the bond yarn during the production phase and to melt without damaging the yarn during the fixation process, to ensure that the pile and bond yarn hold each other better. Thus, it is aimed to prevent pile loss caused by friction.

One of the parameters is the twist. The aim here is to increase the amount of twist in the binder yarn and to provide a better grip on the pile yarn. Thus, it is aimed to prevent the loss of pile that will occur [15].

Among the polyester raw materials, it was observed that the fabrics P1.4, P1.1 and P1.3 gave the best results, respectively. When the properties of these samples are examined, it is seen that the addition of melt to the samples provides a serious improvement in the pile loss and breakage cycle. In addition to this, increasing the number of twists and fixing the yarn provide significant advantages. For this reason, it has been determined that the use of melted material in the chenille yarn produced from polyester raw material, the production of 980 twist and fixed yarn will provide a great advantage in increasing the quality and user satisfaction in woven fabrics. When looking at the yarns produced from viscose raw material, it was seen that the best results were obtained from V1.3, V1.4, and V1.5 samples. In these results, it has been seen that increasing the number of twists for viscose provides a significant improvement in pile loss and breakage cycle, so it has been determined that quality and customer satisfaction will increase thanks to the improvement.

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