

# Study on the Presence of Filament Yarn in Jamdani Saree in Bangladesh

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## Abstract

Jamdani weaving is one of the oldest heredities of Bangladesh. From the beginning 100% cotton yarn was used to produce high quality jamdani saree. The weavers were the finest with weaving skills. Higher yarn count yarns were used to weave the jamdani saree. In course of time at present man-made fibres are also used to produce jamdani saree. The use of filament yarn may have eased the manufacturing difficulties, but the jamdani saree is missing its originality without 100% cotton. In this project, random jamdani saree sample was collected to identify the fibre composition. Samples of filament were also collected from the manufacturer and tested. It was evident that instead of cotton yarn in warp and weft silk and polyester filament yarn were used.

## Keywords

Jamdani, Sustainability, Muslin and Filament Yarn

## 1. Introduction

A filament yarn is made of one or more continuous strands called filaments with each component filament running the whole length of the yarn. Those yarns composed of one filament are called monofilament yarns, and those containing more filaments are known as multifilament yarns. For apparel applications, a multifilament yarn may contain as few as 2 or 3 filaments and as many as 50. In carpeting, for example, a filament yarn could consist of hundreds of filaments. Most of the synthetic fibres have been produced into the form of a filament yarn. Silk is the only major natural filament yarn. Accord-

ing to the shape of the filaments, filament yarns are classified into two types, flat and bulk. The filaments in a flat yarn lie straight and neat and are parallel to the yarn axis. Thus, flat filament yarns are usually closely packed and have a smooth surface. The bulked yarns, in which the filaments are either crimped or entangled with each other, have a higher volume than the flat yarns of the same linear density [1].

Jamdani saree is very well known to Bengali women as the inheritor of ancient fine muslin cloth. Jamdani cloth is made by designing on muslin. Although fine, fine and smooth muslin is now extinct due to various reasons in the course of time, a branch of muslin known as jamdani still survives [2]. Jamdani is a fine cloth of muslin group. A nationally and internationally famous fabric, Jamdani is characterised by geometric or floral designs. For centuries, jamdani has been a coveted textile both at local and international market. Although jamdani essentially means sari, there are of course, jamdani scarves, kurtas, skirts, handkerchiefs, screens and tablecloths as well. In the 17<sup>th</sup> century, dress like sherwani was made of jamdani fabric [3]. Jamdani may be considered as a derivative of fine muslin fabric or textile (figured with different patterns) produced for centuries in South Rupshi of Narayanganj district in Bangladesh on the bank of Shitalakhwa river. The historic production of jamdani was patronized by imperial warrants of the Mughal emperors. Under British colonialism, the Bengali jamdani and muslin industries rapidly declined due to colonial import policies favoring industrially manufactured textiles. In more recent years, the production of jamdani has witnessed a revival in Bangladesh. The motifs of jamdani are generally metallic yarns. In 2013, the traditional art of weaving jamdani was declared a UNESCO Intangible Cultural Heritage of Humanity. In 2016, Bangladesh received Geographical Indication (GI) status for Jamdani Saree. Most of the manufacturer does not have the idea what type of material they are using. A few of the manufacturers are claiming that they are using natural fibres and natural dyes. But the reality is different. After few months of observation, it was found that the manufacturers are using other materials other than 100% cotton and natural dyes. The term sustainability for Jamdani is absent in the most of the cases, but the price for the sarees is very high.

Apart from the material, sustainable weaving may be term for the weavers which is a very important fact that hinders the interest to produce sustainable jamdani saree for the weavers [4].

Jamdani saree is made in a very sophisticated and ostentatious process. Depending on the design, it takes one to six months to weave a saree. Sometimes, it takes only 7 - 20 days as well. A high quality designed Jamdani with higher count of yarn may take six months to one year to weave.

Dyeng of yarn: Earlier, the yarns were dyed only with vegetable dyes, but with the changing times, where the labor and time consumed in this process did not match with the earnings, the dyers and weavers transformed themselves using manufactured dyes. The vegetable dyed Jamdani saree is only made on demand.

The weavers are working on a new range of colors in natural dyes like onion skin, *Jatropha gossypifolia* (ratanjot), *Acacia chundra* (kattha), *Indigofera tinctoria* (indigo), *Punica granatum* (pomegranate), and *Helianthus annuus* (sunflower). These natural dyes are specially developed with the help of Weaver's Service Center, Varanasi. The next step is the preparation of the warp thread. The dyed thread is stiffened and softened by a solution of rice water starch, which makes it easier for the women to wind it onto the bobbins. It is a tedious job, done early in the morning between 4 and 9 to save the threads from drying out in the increasing heat and making them difficult to handle. The wound bobbins are sent to another worker, who prepares the warp on a beam. Afterwards, the warp is sent to the weaver's house, where it is set up on a loom. Pattern-making comes in the fifth step. The designer draws the design on paper, and the naqshaband (graph maker) translates the design onto the graph paper. This is a very important step in the making of a Jamdani, punching of the cards. After the punching, the cards are set on the jacquard of the loom [5].

## 2. Experimental Method

### 2.1. Materials

To identify the fibre composition a sample of Jamdani saree length 5.5 meter and width 1.2 meter were collected and warp yarn was collected during Jamdani saree production from Vulta, Narayanganj from a Jamdani saree manufacturing unit were collected. The sample was then sent to the laboratory for fibre identification.

### 2.2. Methods

Tests were carried out as per ISO 1833: 2017 (E) Part-11, 04 and ISO 7211/5-2020 test method.

## 3. Results and Discussion

The following test results were obtained from the experiments of the collected sample.

From **Table 1**, it was observed that the fibres that were used in the collected Jamdani saree were 100% cotton and silk filament. The sample (B) was identified as polyester filament.

**Table 2** shows the count for Sample (A) as shown in **Figure 1** was 9.1 Tex (64.9 'S/1) - Warp Count and 2.8 Tex (208.0 'S/1) - Weft Count. For Sample (B) as shown in **Figure 1** it was 2.6 Tex (230.2 'S/1) for the polyester filament.

From **Figure 2**, it was observed that when manufacturing Jamdani saree with filament yarn it takes 7 days to complete and with 100% cotton yarn it takes around two weeks to complete. The reason is that with filament yarn a weaver can weave with ease and efficiency but when they use 100% cotton yarn absorbs moisture from the ambience and creates problem during weaving.

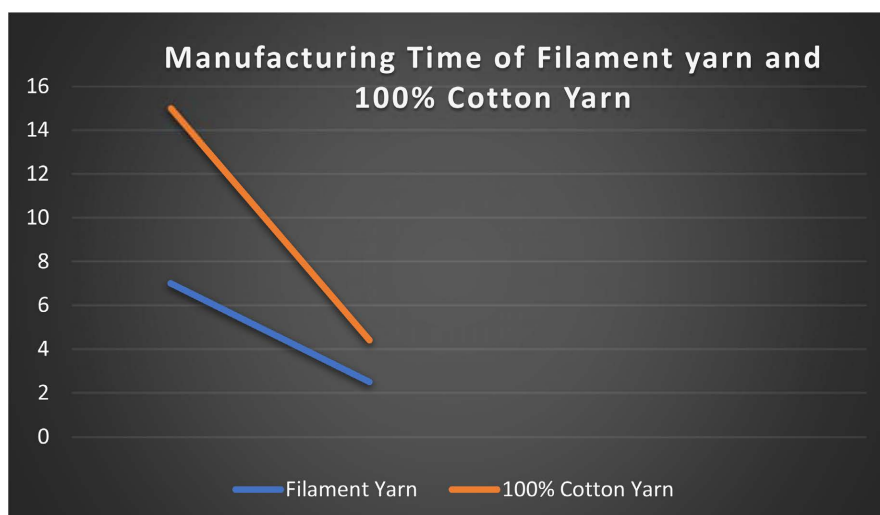
**Table 1.** Identification of Fibre from the collected Sample.

| 1. Fiber Identification:                      |        |
|-----------------------------------------------|--------|
| Test Method [ISO 1833: 2017 (E) Part-11, 04]: |        |
| Sample (A)                                    | Result |
|                                               | Warp   |
| Cotton                                        | 100%   |
|                                               | Weft   |
| Silk                                          | 100%   |
| (ISO 1833: 2017 (E) Part-07):                 |        |
| Sample (B)                                    |        |
| Polyester                                     | 100%   |
| Remarks:                                      |        |

**Table 2.** Determination of Yarn Count from the collected Sample.

| 2. Yarn Count:               |                      |
|------------------------------|----------------------|
| Test Method: ISO 7211/5-2020 |                      |
| Sample (A)                   | Result               |
| Warp                         | 9.1 Tex (64.9 'S/1)  |
| Weft                         | 2.8 Tex (208.0 'S/1) |
| Sample (B)                   |                      |
| -                            | 2.6 Tex (230.2 'S/1) |
| Remark:                      |                      |
| Tex = Tex Count              |                      |
| S = English Cotton Count     |                      |

**Figure 1.** Sample Picture (A and B).



**Figure 2.** Manufacturing Time of Jamdani Saree and Filament sample image.

#### 4. Conclusions

The experiment was carried out to determine the type of yarn that was used in the local Jamdani saree. It may be stated based on the test result and field observation that the weavers are using filament yarns to reduce the manufacturing time. As the rate of breakage during weaving is higher than 100% cotton yarn. This is one reason and another reason is the higher price of 100% cotton compared to the price of filament yarn. But the tradition is to use the 100% cotton to justify the heritage. If the weavers are motivated to use 100% cotton yarn with an increased unit price, then the trend of using filament yarn may reduce.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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