

Reprint

ISSN 2076-3972 (Web Version)

Institutional Engineering and Technology (IET)

(*Inst. Engg. Tech.*)

Volume: 3

Issue: 1

December 2013

Inst. Engg. Tech. 3(1): 11-12 (December 2013)

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SPINNING COMBINATION WITH COTTON AND JUTE/WOOD CELL USING RING FRAME

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Accepted for publication on 8 November 2013

ABSTRACT

Haque MT, Jafirin S, Hossen M, Khatton A, Hossain SMM (2013) Spinning combination with cotton and jute/wood cell using ring frame. *Ins. Engg. Tech.* 3(1), 11-12.

Cotton is the natural cellulose seed fibre and jute cell/wood cell is regenerated cellulosic fibre. Their ultimate lengths and chemical compositions are different. So, a Process of cotton Wood cell/jute cell blending has been developed through the experiments. The experiments provided the information regarding machinery and processing system required for the processing of cotton-jute/wood cell blended yarn. Cotton and jute/wood cell were mixed together very easily and it was possible to spin cotton - jute/wood cell blended yarn.

Key words: yarn, spinning, cotton, ring and jute

INTRODUCTION

Jute is grown mainly in Bangladesh, India, China, Nepal and Thailand. Cotton is the oldest fibre used for textile purpose. In the tropical countries it is the most important fibre. This important cellulosic seed fibre major constituent are cellulose, Protein, Oil and wax, Minerals and others. Its density of 1.54 gm/cc which corresponds to a specific volume of 0.64 cc/gm (Trotman 1984).

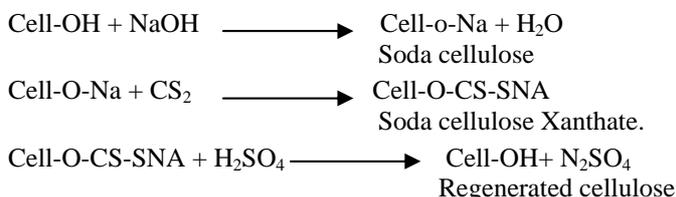
On the other hand Jute cell/wood cell is newly used for textile purpose. This important regenerated cellulosic fibre major constituents are cellulose. The tensile strength of the Jute cell /wood cell fibre are 4-7 gm/den and density of fibre is 1.48 gm/cc. Environment friendly natural fibre cotton blend with wood cell/Jute cell and other natural fibre can be used for different purposes for world wide consumption as the cheapest and value added commodities. Market of cotton-wood cell/Jute cell blending products are increasing nationally and internationally but with increasing of global awareness about pollution free environment, potentialities due to their positive qualities has got wide production in comfortable wearing apparels (Atkinson 1964).

On the other hand wood cell/Jute cell in regenerated cellulosic fibre and cotton is only natural cellulosic seed fibre. But some common characteristic like bio-degradability, photo degradability, thermal degradability, non plasticity, drapability etc. Wood cell/Jute fibre has been facing some problems to production, marketing use and high labour cost. But both fibres can produce diversified produces with can uphold improvement of market potentiality.

So, there is enough possibility for the development of cotton-Jute/wood cell blended textile materials for production of value added products.

MATERIALS AND METHOADS

Normally Jute cell & wool cell are not produced in our country. Both cells are regenerated celluloid fibre. There blending ratio is 50:50 production of Jute cell/wood cell are wet spinning process. To produce jute at first we take the cellulosic part of Jute such as steam bark and cuttings e.t.c Then we cut these into small pieces and make these would after some chemical reaction with CS₂, H₂SO₄ and NaOH. We got jute cell wood cell fibre. The fibre which we get by regeneration from its main origin is called regenerated fibre.



At the same process we get Jute cell /wool cell fibre. Three types of blended yarn of Jute-Jute cell, Jute-wool cell and Cotton-Wood cell are produced in cotton spinning system.

We had mixed 50:50 blending Ration (Modified Jute-Jute cell, Jute-wood cell and Cotton-Wood cell. But we got different count, strength, twist CV%, Elongation% etc. by following same machine and procedure of cotton spinning system.

PROCESS OF REGENERATED FIBRE MANUFACTURING

1. Preparation of the wood pulp
2. Steeping and pressing
3. Shredding

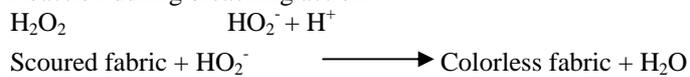
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4. Aging
5. Mixing (Solution)
6. Ripening
7. Spinning

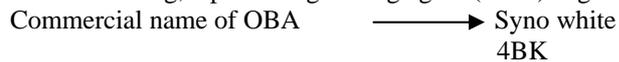
After Scouring and bleaching. Brightening agent is used.

After Bleaching, colorless fabric is found H_2O_2 is universal bleaching agent

Reaction during bleaching action



After bleaching, Optical brightening agent (OBA) is given in the bath



It is done in alkaline medium [L:R=1:8]

RESULTS AND DISCUSSION

After deterring the yarn properties of three different mixture (Jute-Jute cell, Jute-Wool cell and Cotton-Wool cell), the properties and given in Table 1, 2 & 3 respectively.

Table-1

Blending Ratio Jute:Jute cell	Count	T.P.I	Elongation %	C.S.P
50:50	20	15	1.91	1720
40:60	19	15	1.63	1610
30:70	17	15	1.37	1530

Table-2

Blending Ratio Jute:Wood cell	Count	T.P.I	Elongation %	C.S.P
50:50	21	15	1.73	1890
40:60	19	15	1.68	1800
30:70	18	15	1.54	1740

Table-3

Blending Ratio Cotton:Wood cell	Count	T.P.I	Elongation %	C.S.P
50:50	23	15	1.43	2185
40:60	21	15	1.62	1900
30:70	20	15	1.79	1860

To determine the physical properties of a particular type of yarn blending is an important issue in the Industrial sector as well as for the users. If the users become well known about the using yarn then they can forecast which type of fabric will be suitable for that particular type of yarn. As the aim of this work is to use the maximum amount of jute in the blend that is why the blend is performed from jute: Jute cell, Jute-Wood cell and cotton: Wool cell. It is seen that the all mixture shows very similar property to 100% cottons yarn. It is possible to produce various types of diversified products from the jute wools cotton-wool cell and jute wool cell blended yarn through this experimental result. It is clear that yarn of coarser count shows very comparable and acceptable properties than that of finer count.

CONCLUSION

Cotton is the natural cellulose seed fibre and jute cell/wood cell is regenerated cellulosic fibre. Their ultimate lengths and chemical compositions are different. So, a Process of cotton Wood cell/jute cell blending has been developed through the experiments. Cotton and jute/wood cell were mixed together very easily and it was possible to spin cotton - jute/wood cell blended yarn.

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