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## Shoddy woollen industries: Say no to dye chemicals

**Neelam Saini, Saroj Yadav and Neelam M Rose**

### Abstract

Dyes used in textiles industries to add color the raw material and end product. Dyes can be synthetic, which means they are scientifically made with chemicals or natural. Today's textile industries uses different types of dyes for enhancing the fabric/ garment and create huge amount of water with chemicals i.e. basic chemicals, washing agent, detergents, scouring agents, levelling agent, whitening agent etc. Which create the pollution problems in environment cause health problems as well as wastage of huge amount of water. So the shoddy industries make a solution to overcome these problems is recycling of old clothes. The present study was conducted in Panipat city of Haryana state. Panipat city was selected purposively because Panipat is the hub of shoddy units and easy approachable. Total number of twenty units was selected randomly with the help of District Industries Centre, Panipat, comprising 10 units engaged in yarn manufacturing units and 10 units in products manufacturing units were studied and technical information was gathered from owners/ representatives of the shoddy units. The information was collected by self structured interview schedule to regarding establishment year of shoddy units, age group of owners and education status of the owners of units. The results revealed that most of the owners were graduates in both types of shoddy units. Wool, polyester and acrylic were used by all units as raw material followed by cotton in fewer amounts. Polyester, acrylic and cotton was highly used by units as blending fibres with wool for manufacturing of shoddy blankets, rugs with good strength. No single units were using any type of dyes for manufacturing the yarns/ fibre and fabric. Thus, the recycling process is eco- friendly and safe for environment also.

**Keywords:** Fibre, fabric, manufacturing, shoddy units, weaving, wool, yarn

### 1. Introduction

Dyes used in textiles industries to add color the raw material and end product. Dyes can be synthetic, which means they are scientifically made with chemicals or natural. Synthetic dyes are usually made from coal tar and petroleum. They vary so much because different materials require different chemicals to make the dye adhere. For example, you cannot use the same dye for leather that you would for cotton, due to the extreme difference in material (Elisha Madison). Types of synthetic dyes include: acid, sulfur, reactive, azoic, oxidation, mordant, solvent, vat etc.

There are different types of chemical used in textile dyeing are: Basic chemicals i.e. Soda ash, Hydrochloric, Hydrogen peroxide, Sulphuric Acid, Acetic Acid, Formic acid, Caustic soda. Washing agent or soaping agent Detergent and scouring agent, Leveling agent, Salt, Sequestering agent, Whitening agent, Fixing agent, Softener, Bleaching agent, Reducing agent, Stabilizer, Enzyme, Anticreasing agent, Antifoaming agent

Indian textile industry is not only the oldest industry in the country but also one of the major industries providing employment and fetching foreign exchange for the country. Average lifetime of any clothing is considered to be about three years, after which, they are thrown away as old clothes. Sometimes even 'not so worn garments' are also discarded as they become unfashionable or undesirable (Sakthivel 2012) [6]. One of the biggest problems in the globe is management of waste. Which create pollution problems called rags. Rags are used by shoddy industries for making shoddy yarn which are used in making low cost products. The process of reuse of rags is called recycling. The method of reprocessing the used clothing, fibrous material and clothing scraps from the manufacturing processes has already been adopted by the shoddy units. The recycling of woollen and acrylic products in Panipat is the biggest textile recycling industrial cluster in India (Norris, 2012) [4]. Recycling of textiles was a domestic craft in India but currently there are textile clusters and small scale industries to work on

second hand imported clothing and create a range of products. This recycled yarn is woven into poor quality cloth and blankets for the domestic market and for export. The leftover garments are cut into square pieces to be sold as industrial wipers for the paints, chemicals and construction industries. Many products are prepared from the recycled yarn which are used as garment but at this time this yarn can be used for making, shawls, mufflers, doormats, prayer rugs, blankets, bed linen etc. which are used by both male and female. Recycling is the reuse, remanufacturing, or reprocessing of a material or product with the aim of reducing waste. Recycled wool has been re-used in industrial processes for a long time. Shoddy yarns are prepared by using the used and discarded clothes so their strength is not good that is why these are prepared by adding new and unused fibres. Blending is the process which can improve the quality, look as well as strength of the shoddy yarn by mixing the other fibres such as polyester, acrylic etc. Good quality of yarn can be prepared by blending process. Blending is done to increase strength, durability, aesthetic value of recycled yarn/ product. It can be done with different fibres like acrylic, polypropylene, polyester etc. This rag is used in making shoddy yarns in shoddy industries if people will aware about this shoddy yarn and can be job opportunities for young generations in industries. So there is needed to be work done in this field. Recycling is for both, environmental and economic benefits. It avoids many polluting and energy intensive processes that are used to make textiles from fresh materials. Very few people are aware about shoddy yarn so there is need to create awareness among people about good quality of shoddy yarn. However, creating awareness among people about reuse of rags for making usable products will be benefit for society and shoddy industry, which will be affordable for everyone because of low cost.

## 2. Methodology

The present study was carried out to find out the present status and usage practice of shoddy units. For this, an

interview schedule was developed and all relevant information was gathered from the representatives/ owners of the selected shoddy units. Total twenty shoddy units were selected randomly with the help of District Industry Centre, Panipat.

**2.1 Selection of shoddy units:** For study work, with the help of District Industries Centre, Panipat total twenty shoddy units which were engaged in yarn manufacturing and products manufacturing were selected, comprising ten of yarn manufacturing units and ten products manufacturing units.

**2.2 Collection of Information:** The relevant information regarding status of shoddy units was collected from Panipat city of Haryana State. Panipat was selected purposely, because it considered as hub of shoddy units and it was easy approachable for study work.

**2.3 Personal profile of owners of units:** Information was gathered from both types of units about the age, education status of owners, establishment year of shoddy units, forms of procured raw materials, types of raw materials used, types of blends used and types of products manufactured in shoddy units.

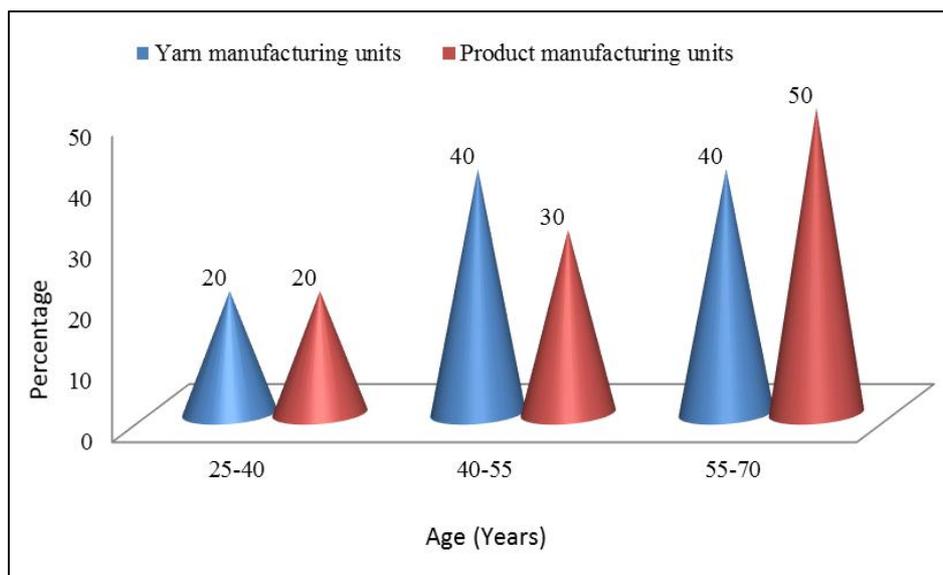
## 3. Results and Discussion

### 3.1 Personal profile of owners of shoddy units (n=20)

The personal profile includes the age group and education status of owners, establishment year of yarn manufacturing units and products manufacturing units.

#### 3.1.1 Distribution of the respondents according to their age group

The data presented in fig. 1 indicated that in yarn manufacturing units an equal number of respondents i.e. 40 percent belonged to age group of 31-50 and 55-70 years and only 20 percent respondents were below 30 years. In product manufacturing units 50 percent respondents belonged to age group of 55-70 years, 40 percent of 31-50 year age group.



**Fig 1:** Distribution of the respondents according to their age group

#### 3.1.2 Education status of owners of shoddy units

The data described in fig. 2 show the educational qualification of respondents reveal that in yarn manufacturing units 70 percent of the owners were graduate and only 30 percent

owners were post graduate. In product manufacturing units 60 percent owners were graduate and 40 percent were post graduate.

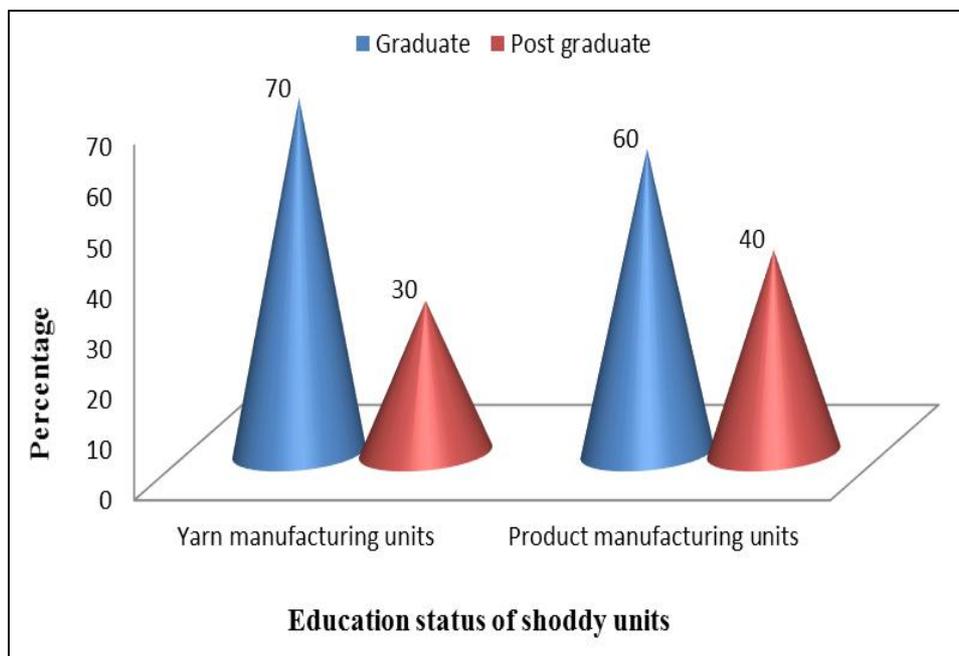


Fig 2: Education status of owners of shoddy units

### 3.2 General information related to shoddy units

Table 1: Year of establishment of shoddy units N=20

Variables	Yarn manufacturing units (n=10)		Product manufacturing units (n=10)	
	Frequency	Percentage	Frequency	Percentage
1905-1940	01	10	-	-
1940-1975	01	10	01	10
1975-2010	08	80	09	90

#### 3.2.1 Year of establishment

**Year of Establishment:** It is apparent from Table 1 that out of selected ten yarn manufacturing units only one unit was established during the year 1905-1940, whereas one unit was established during 1940-1975 and majority of the units i.e. eight units were established after 1975 and before 2010. In case of product manufacturing units nine units were established during the years 1975 to 2010 and only one unit

was established during 1940-1975. Whereas in the study of found that most of the units were established after 1980.

### 3.3 Investigation of woollen shoddy units in terms of raw materials, form of raw materials and blend percentage and products manufactured by woollen shoddy units.

#### 3.3.1 Forms of procured raw materials in shoddy units.

The shoddy yarn manufacturing units procured raw material in different forms i.e. rags, cuttings of woven fabrics, trimmings and hosiery cuttings. The data presented in Table 2 show that all the units (100%) procured raw materials in the form of rags. The other forms of raw material procured by shoddy yarn manufacturing units for preparation of recycled yarns were trimmings (50%), hosiery cuttings (40%) and cutting of woven fabrics (30%). From the data it is concluded that the yarn manufacturing units procured raw materials in different forms for manufacturing of shoddy yarns.

Table 2: Forms of procured raw materials n=10

Raw materials	Yarn manufacturing units	
	Frequency	Percentage
Rags	10	100
Cuttings of woven fabrics	03	30
Trimmings	05	50
Hosiery cuttings	04	40

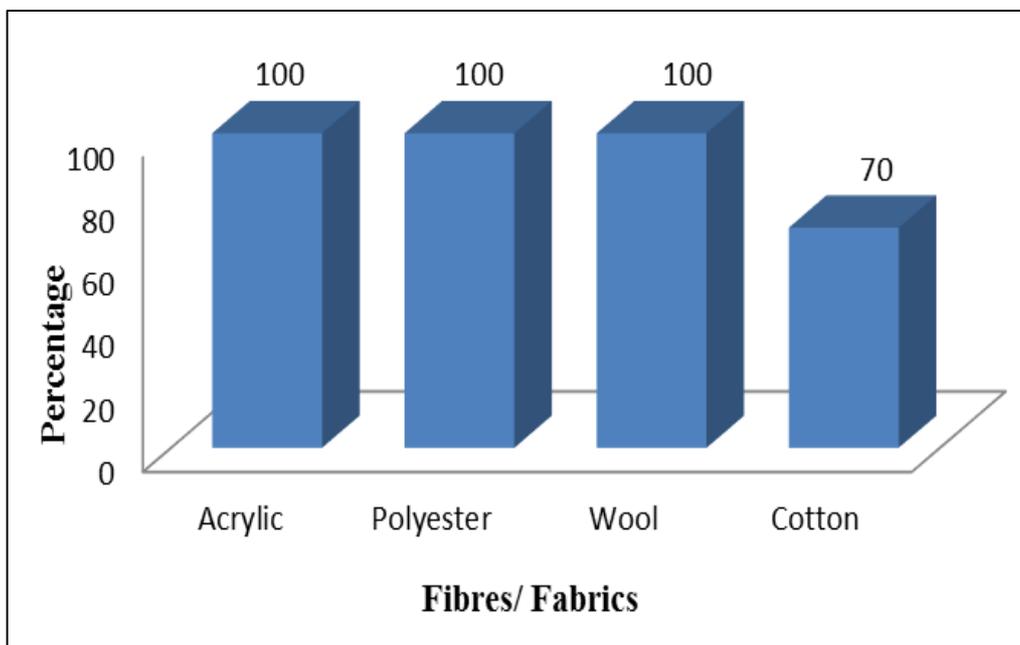
\*Multiple responses

#### 3.3.2 Types of fibres/ fabrics used as raw materials in shoddy units (n=10)

Data given in fig. 4 show that all the yarn manufacturing units (100%) use acrylic, polyester and wool fibre/fabric pieces for manufacturing of shoddy yarns. Whereas 70 percent units also use cotton rags for manufacturing of recycled yarn. It is concluded from the data that shoddy yarn manufacturing units use different type of fibres/fabrics as raw material for

manufacturing of shoddy yarn. The cost of manufacturing shoddy yarn varies depending upon the quality and type of rags used for manufacturing of shoddy yarns.

These results are supported by Gupta, M. and Saggu, H. K. (2015) [3]. The result of the study revealed that majority of the shoddy units used wool rags and acrylic waste as a raw material for manufacturing of the shoddy yarn.



**Fig 3:** Type of raw materials used in shoddy units

### 3.3.3 Blend percentage used for manufacturing of yarn in shoddy units

**Table 3:** Blend percentage used for manufacturing of yarn in shoddy units n=10

Type of fibres	Blend percentage (%)	Frequency	Percentage
Cotton	05-10	07	70
Wool	40-70	10	100
Acrylic	05-40	10	100
Polyester	05-40	10	100

\*Multiple responses

Data presented in Table 3 show that all the shoddy yarn manufacturing units (100%) use acrylic, polyester and wool fibres in the form of waste pieces/ rags for manufacturing of blended shoddy yarn of different fibre compositions. The composing of acrylic and polyester fibres varied from was 5 to 40 percent i.e. Minimum use 5 percent acrylic fibre was for

blend and maximum was up to 40 percent. Use of wool for blend with other fibres was from 40 to 70 percent by all the shoddy yarn manufacturing units whereas 70 percent shoddy units use cotton fibre for blending with other fibres from 5 to 10 percent for preparation of recycled shoddy yarns of different blend composition. Hence, it is concluded that shoddy yarn manufacturing units use different type of fibres/fabrics in different composition for preparation of blended shoddy yarns.

These lines are supported by Nagpal, N. (2016) [5] that the quality of blankets varies with the content of wool in yarn. The good quality blankets have more than 75 per cent wool content, while the average quality has 50 per cent wool content. Blankets having less than 50 per cent wool content are of poor quality

### 3.3.4 Different types of products were manufactured from woollen blended yarn in product manufacturing units

**Table 4:** Type of products manufactured from woollen blended yarn n=10

Products		Frequency	Percentage
Apparel	Ladies' coat	05	50
	Gents' coat	06	60
Home Furnishing	Blanket	10	100
	Carpet	10	100
	Foot mat	06	60
	Prayer mat	04	40
	Rug	10	100
	Stool mat	6	60

\*Multiple responses

The data given in Table 4 depict that different type of products manufactured from woollen yarns in shoddy product manufacturing units. It was found that mainly two type of products (apparel and home furnishing) are prepared using recycled woollen blended yarns. In apparels only gents' coat and ladies' coat are prepared in 70 and 50 percent units, respectively. In home textiles blankets, carpets and rugs are the main products being prepared by all the product manufacturing units (100%) followed by foot mat and stool mat (60%) and prayer mat were being prepared only 40 percent units. Hence, the major products being prepared in

different product manufacturing units were gents' coat, ladies' coat, blankets, rugs and carpets articles from recycled blended yarns. These lines were supported by Pant, and Nagpal (2016) [5] that the weaving units engaged in making products out of shoddy yarn and traders informed that in Panipat 95 per cent of the yarn produced is being utilized in making blankets of various types. Shoddy blankets are manufactured for various purposes. These are mainly – Relief blankets, Hospital blankets, Railway blankets and Shoddy blankets for BPL Population.

**Table 5:** whether yarn is dyed or not? If yes, type of dyes used. n=20

	<b>Dye used</b>	<b>Frequency (%)</b>
1	Vat dye	-
2	Azo dye	-
3	Reactive dye	-
4	Natural dye	-
5	Direct dye	-
6	Acid Dye	-

From the data in Table 5 it was found that no single unit was using any dye at yarn stage or fabric stage. So, we can say that shoddy products are safe and eco-friendly.

#### 4. Conclusion

It is evident from above discussion that various attributes related with shoddy yarn manufacturing units and product manufacturing units which were making shoddy yarns using rags/old scraps very important for poor people by providing them low cost products. It was also concluded that units were using wool, acrylic, polyester and cotton as raw materials for yarn manufacturing in shoddy units. The prepared shoddy woollen yarn was used for making different apparel and house hold textiles like carpets, rugs, mats with blend of acrylic, polyester and cotton without any use of dyes.

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