



Types of Carpet in India

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ABSTRACT

Carpets are heavy fabrics mainly made from yarns of wool, cotton, silk etc. for covering floors or stairs. These are used in households, offices and other places for providing warmth, comfort, adding beauty, style, cushioning from slips and falls and for maintaining appearance. The carpet industry is one of the oldest and the most popular industries in India. This industry kept its first foot in India in the 16th century when the Mughal emperor Akbar brought some Persian carpet weavers to his palace in Agra and then this craft flourished very well. Presently, there are different centers are situated in India, mainly in 13 states for manufacturing handmade carpets. There are several processes carried out in the handmade carpet industry such as sorting of wool fibers, yarn making, dyeing, manufacturing of carpet, its finishing and packaging. Four different methods can be used to manufacture handmade carpets namely; knotting, tufting, weaving and embroidery. This paper deals with all types of carpets and related to their manufacturing process.

KEYWORDS: Handmade carpets, knotted carpet, tufted carpet, woven carpet, embroidered carpet.

I. INTRODUCTION

According to The Random House Dictionary of English Language, "Carpet is a thick woven material made up of wool etc. for covering floors or stairs". Handmade carpet made only with natural fibers. So, we can define a carpet as a heavy and thick textile material, made from natural fibers for covering floors. The purpose of carpet is to provide warmth, comfort, add beauty and style, cushion from fall and slip. The handmade carpet industry is the place where all processes of handmade carpet manufacturing from procuring raw materials, and processing to till packaging are done. This industry kept its first foot in India in the 16th century when the Mughal emperor Akbar brought

some Persian carpet weavers to his palace in Agra and then this craft flourished very well. Presently, there are different centers are situated in India, mainly in 13 states for manufacturing handmade carpets. Many handmade carpets get GI numbers i.e., Geographical Indication due to their uniqueness. This paper gives information about different types of handmade carpets with their special features. Detail of these handmade carpets are given below-

TYPES OF HANDMADE CARPET

Handmade carpets are four types and this classification is done based on techniques and manufacturing processes used for manufacturing the handmade carpet in the industry. These types are-

- Knotted carpet
- Tufted carpet
- Woven carpet
- Embroidered carpet

STEPS INVOLVED IN MANUFACTURING OF HANDMADE CARPETS IN THE CARPET INDUSTRY

There are six steps involved in manufacturing any handmade carpet in the handmade carpet industry. These steps are categorized according to sections or departments present in the handmade carpet industry. These steps are-

- Processing of wool fibers
- Dyeing
- Designing of carpet
- Manufacturing
- Finishing
- Packaging

1. PROCESSING OF WOOL FIBERS

The first step is the processing of wool fibers. Wool fibers are converted into yarn. It involves four steps-



a) **Wool sorting:** Wool is either imported or bought from nearby markets and is carefully sorted to pick out unwanted particles and sorted according to the natural colour of wool fibers.

b) **Washing:** Wool often carries dust and grease which is removed by washing it thoroughly with soap solution and water, then wool fibers are sun-dried for two-three days.

c) **Carding:** The carding process allows the fiber stand to flow smoothly when spinning. This is also the stage for blending different wools come from different places. Traditionally, carding was performed by hand but machine carding was introduced when the industry grew. However, the hand-carded product is still available. It depends on the customers' demand.

d) **Spinning:** The carded wool is spun into yarn by using a charkha or a spinning wheel. The thickness of the yarn depends on the quality of the carpet and generally, a three-ply yarn is used.

2. DYEING

a) Natural dyes

To obtain different colours, a number of natural dyes from the plant and animal kingdom are used and described below-

- **Blue** from indigo, a plant of the pea family.
- **Red** from the root of the madder, kermes (chermes) and cochineal (dried lice).
- **Yellow** from saffron, reseda, vine leaf or pomegranate.
- **Green** from indigo + vine leaf, pomegranate skins or by mixing blue and yellow.
- **Brown** from the walnut shell, oak bark.
- **Orange** from henna + root of the madder.
- **Beige** from the walnut shell, and pomegranate skin.
- **Black** from indigo + henna.

Besides these examples i.e., mentioned above, other plants are used to dye the yarn-

Brazil Wood is a tree grown mainly in Brazil. Used for red, purple and black colours.

Catechu is a tree grown in India and East Africa. Used for brown colours.

Rhubarb is a plant with long stalks and large leaves. Used for yellow and copper red colours.

Yellow Wood, an American tree. As its name indicates it is used for yellow colours.

Besides these colours, white, black and grey colours get by using the natural colours of the wool.

b) Chrome dyes

Chrome colours are available in a large number of varieties. At the beginning of the 20th century, carpet manufacturers began to use better synthetic colours known as chrome dyes. Chrome dyes became a more reliable alternative to aniline. These synthetic dyes are more steadfast and have a much wider spectrum of colors to choose from. Chrome dyes bind to the wool with potassium bicarbonate, which resists fading and does not weaken the wool. There are more than 600 chrome colors to choose from. Today one can find chrome dyes in a large variety of nuances. They are considered to be equal to the natural dyes but do not provide the same softness in the looks, the carpets get harder, slightly metallic luster which mitigates after about 10-15 years. Sometimes a combination of both natural and chrome dyes can be found in manufacturing a carpet. The weaver uses the one that gives the best result for the purpose. It is common to use chrome-dyed fibers in a carpet to create details (to create a design) and natural dyes fibers for the background and larger fields.

c) Acid dyes

Acid dyes are cheap to make but the colors run.

Dyeing Process



When the yarn for a carpet is spun, the next phase is to colour it. This is a complicated process that demands knowledge and accuracy to achieve good results. The dye used to create the desired color is very specific. The carpet industry has a "dye specialist" who consults a book for the exact color formulas and ingredients. A carpet dye is not an item that can be bought at a store and poured into a vat. Multiple colors must be combined at a specific temperature, and the yarn must remain in that dye for a specific duration. If the water is not at the right temperature, or the yarn is not submerged for the right amount of time, then the entire batch could be deemed useless. The specialist must also take into account the effect that the weaving will have on the



dye. The unspun yarn has a deeper, richer color than yarn that has been woven into a rug. Depending on the weather, the dyed yarn has to be dried in the sunlight for one to three days.

3. DESIGNING OF CARPET

i) Types of Patterns

These patterns can decorate a small part of a carpet or be used in an overall motif. From the pattern on a carpet, it is possible to see what style and also which origin the carpet has. The pattern is the most obvious and perhaps the most important characteristic of a carpet. Around the cities and in the workshops, much time is emphasized on developing and refining the old traditional patterns which are all first drawn by hand on paper. The types of patterns are-

- a) Curvilinear Patterns
- b) Geometrical Patterns
- c) Figural Patterns

a. Curvilinear patterns



Patterns created with fine, curving lines are called curvilinear patterns. These kinds of patterns can occur in every type of carpet, from the ones with medallions to the all-over. To create this kind of fine lines a higher knot density is demanded in the carpet.

b. Geometrical patterns



These patterns are created with straight lines or by using geometrical shapes are called geometrical and can be recognized by their straight angles,

diagonals, triangles and other geometrical shapes. Geometrical patterns can be also seen on carpets with medallion motifs and all-over motifs.

c. Figural patterns



Figural carpets often portray people or animals and are often based on history or mythology. It is common with natural and realistic depictions of humans and animals. When shown they often consist of one or more characters that sometimes portray a historical event.

ii) Methods of Designing

a. Talim method



The Tamil method is also known as the script method. In this method, the designer determines the design and writes down the colour of each knot in every line according to the design to be prepared on the carpet. Then, during the manufacturing process of the carpet, this talim is read by the designer reader and communicated to the weavers to produce the design on the carpet.



b. Drawing method



Design made on a large piece of paper. The size of paper used is according to the size of the carpet going to be produced. Then, this drawn design is transferred to the butter paper. After this, make holes by using the needle on the traced line of the design on butter paper.

c. Graphical Presentation method



Graph paper or design paper is used for making the design according to the carpet. Then, these drawn designs are coloured by using water colour in different shades. After that, this designs' paper used by the weaver to make the design on the carpet by using different shades of colours according to the design.

d. Marking/ Chinese method



The Chinese method is either to create a full-size paper model of the intended carpet for the weavers to copy or to trace the design with coloured crayons on the set up of warp yarns.

4. MANUFACTURING AND FINISHING PROCESS FOR DIFFERENT TYPES OF HANDMADE CARPETS

a) KNOTTED CARPET

i) Manufacturing Process of Knotted Carpet

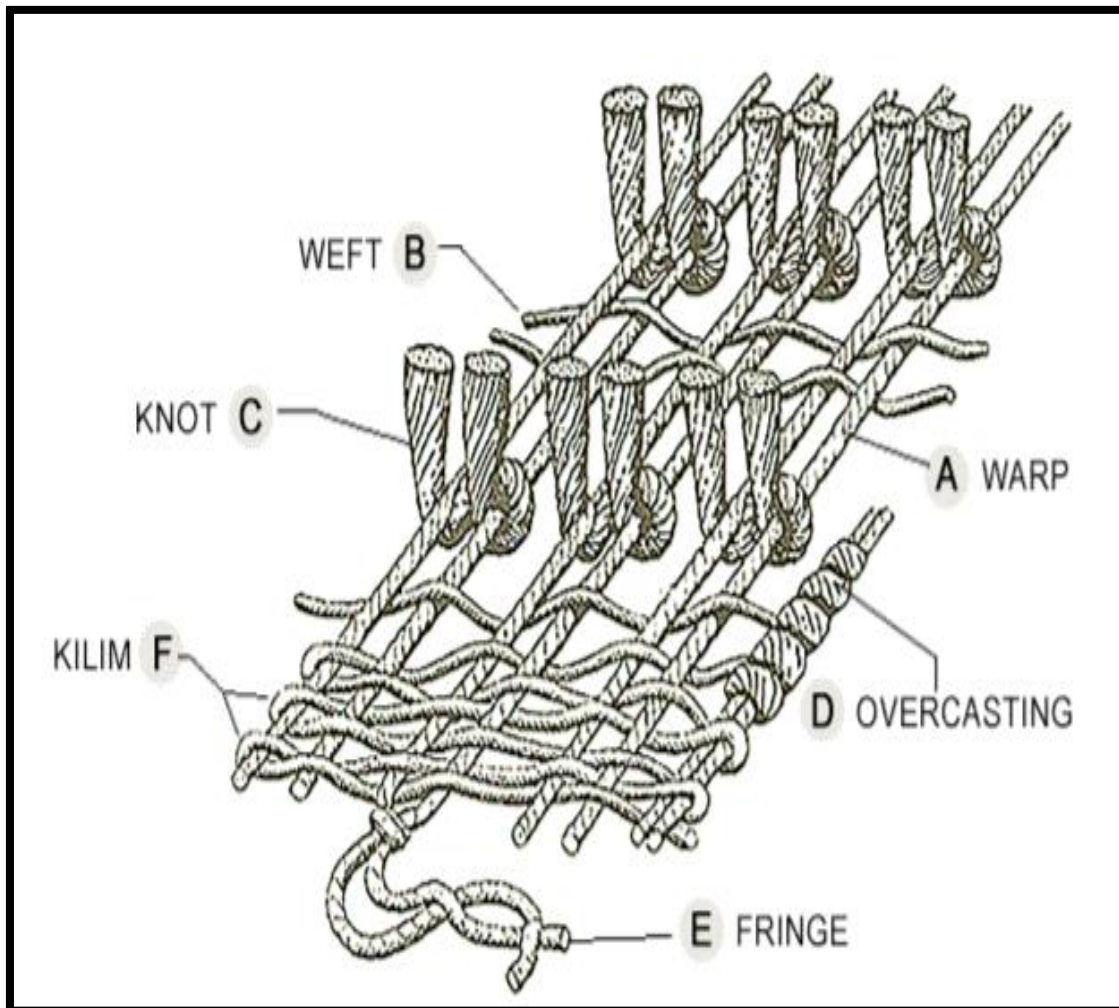


Knotted handmade carpets are prepared on a vertical loom. In the vertical loom set-up, the warp yarns are tied at both edges of the loom (lower and upper sections of the loom). These tied yarns eventually become the fringe of the carpet. The weft yarns run horizontally and interlaced with the warp to create the foundation of the carpet. The weft yarns are also used to create the selvages (or edges) of the carpet, this holds the carpet together. The knots i.e., made of wool or silk are then tied to the two warp yarns. The weaver uses a knife to cut the tied knot, weaver ties the knot with his or her hands and finishes the process by securing and tightening the knot with a comb-like tool. Then use a beater to



make the woven carpet more compact. A scissor is also used to clip the yarns evenly on the carpet to

make all piles even in length. Figure 1 shows the simplified structure of a handmade knotted carpet.



SIMPLIFIED STRUCTURE OF HAND-KNOTTED CARPET

A. WARP - The parallel threads running through the entire length of the carpet onto which the knots are tied.

B. WEFT - The threads running across the width of the carpet are inserted between all the rows of knots. These threads pass through alternate warp threads. Their job is to secure the knots in parallel lines and to strengthen the fabric.

C. KNOT - The term used for a strand of wool yarn that is looped around two adjacent warp threads and then cut to form the pile (surface of carpet).

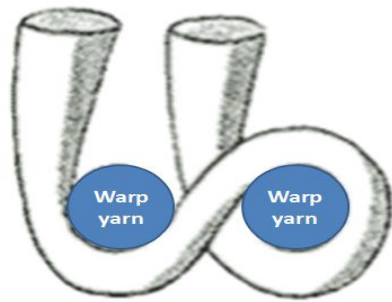
D. OVERCASTING - A simple wrapping of dyed yarn along the entire length of both sides of a handmade carpet to form the selvage.

E. FRINGE - The visible continuation of the warp threads at both ends of the carpet.

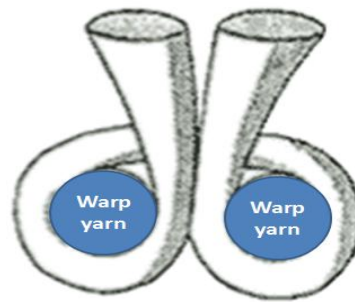
F. KILIM - The pile less web structure (woven area) of warp and weft between the carpet's pile and the knotted fringe. This is also known as carpet without pile.

Two types of knot are used-

1. Persian or Sehna knot
2. Turkish or Ghiordes knot



PERSIAN KNOT



TURKISH KNOT

ii) Finishing of Hand Knotted Carpet

- **Trimming:** The carpet after completing the weaving process is taken off the loom and the designs or patterns made on it are trimmed by using trimming scissors.
- **Washing and Drying:** The trimmed carpet is washed with fresh water, soap solution and chemicals. The washed carpet is dried in the sunlight for up to four to five days.
- **Final Trimming:** The final touch is given to dried carpets by trimming and stretching, where ever necessary. The purpose is to bring the yarns woven in level at the surface of the carpet.

b) TUFTED CARPET



The hand-tufted carpet looks and feels very much like a hand-knotted carpet. This is because it uses the same fine wool and dyes as the fine-knotted carpets use. It differs in the construction method. Instead of tying each knot by hand, the tufted carpet is made with a tufting gun. This method saves a lot of time and keeps the price of the carpet much lower than a knotted carpet of equal size.

Manufacturing and Finishing of Hand Tufted Carpet



Iron frame with nails at four sides is used to manufacture hand-tufted carpet. Canvas fabric i.e., foundation fabric is used as base fabric to prepare hand-tufted carpet. Firstly, stretch the canvas fabric onto the iron frame. Then, make the design onto this stretched fabric by using ink. Then, a tufting gun is used to make the pile-like structure on fabric with wool yarn and these piles are made on the other side of the canvas fabric. Finish the entire carpet by changing the yarns' color as needed according to the design. Then, take off the carpet from loom and place its face (right side of the carpet) down towards the floor. Then, place a net



fabric on the back of the carpet and apply a layer of latex on the net fabric, as the latex dries, cut out the extra net fabric as well as the canvas fabric. Then apply one another layer of latex to the entire backside of the carpet. Then, put a woven fabric on the backside of the carpet to give it a finished look. After that, sew and finish the edges of the carpet by using an overcasting stitch. Then, shear the piles i.e., present at the front side of the carpet by using a shearing machine.

c) WOVEN CARPET

This carpet is produced on a loom. The process of producing this carpet is quite similar to woven fabric such as plain and pile fabric. But the difference in yarn count and woven pile carpet, after the washing process a layer of latex is applied on the back side of the prepared carpet to secure or fix the pile in place. Then, the packaging is done by using different packaging materials according to the demand of buyers.

d) EMBROIDERED CARPET



These types of carpets are made by using loosely twisted yarn made from cotton, linen and other natural types of fibers. Chain and overcasting stitches are made on carpets to prepare embroidered

carpets. This type of carpet is used to create solid and stylish patterns by making a clear embossed design by embroidery stitch and helps to add different textures. This type of carpet is made by using two methods-

First method: Tracing method is used to transfer the design from paper to fabric from which the carpet is going to be made. Then using different colored threads, according to design embroidery is done with chain stitch.



Second method: Firstly, the selected design is traced to the base fabric of the carpet. The same design is traced on another fabric from which motifs are to be cut. Now the cut motifs are placed on the base fabric according to the traced design and then cut motifs are attached to the base fabric of the carpet by using the embroidery stitches.

Finishing: These embroidered carpets, wash with water and soap solution. Then keep it for drying. Then at both edges, fringes are added and then tie these fringes create the final and finished look of the carpet.



Adding fringe by using yarn and needle



Tying of carpet fringe



5. PACKAGING

All finished carpets are rolled and wrapped in polythene sheets and are sealed at each end.

CENTER OF HANDMADE CARPET INDUSTRY IN INDIA

S. No.	CENTER	STATE
1.	Bhadohi, Mirzapur, Varanasi, Agra, Sonbhadra, Sharanpur, Sahajanpur, Jaunpur, Gopiganj, Ghosla, Khamaria, Madhosingh.	UTTAR PRADESH
2.	Baramulla, Pandipura, Anantnag, Badgam, Pulwama, Kupwara, Jammu, Leh, Srinagar.	JAMMU & KASHMIR
3.	Bikaner, Jaipur, Tonk.	RAJASTHAN
4.	Panipat, Sonapat	HARYANA
5.	Dharmshala	HIMACHAL PRADESH
6.	Amritsar, Palampur	PUNJAB
7.	Elluru and Warrangal	ANDHRA PRADESH
8.	Gwalior	MADHYA PRADESH
9.	Danapur, Madhubani, Obra	BIHAR
10.	Puri, Khurda, Nayagarh, Cuttack, Jagatsinghpur, Dhenkanal	ORISSA
11.	Baruch	GUJARAT
12.	Bangalore	KARNATAKA
13.	Pondicherry	PONDICHERRY

India's 90% handmade carpet produces in Uttar Pradesh. Bhadohi is known as the city of carpets. Bhadohi, Mirzapur, Varanasi and hand-knotted carpets of Jammu & Kashmir had got G. I., Embroidered and pure silk carpets are made in Jammu & Kashmir. Pure wool carpets are made in only Jammu & Kashmir and Himachal Pradesh. Carpets with Ikat patterns are made in Andhra Pradesh and Orissa.

II. CONCLUSION

In India, all handmade carpets are classified into four categories based on techniques used for manufacturing and these all handmade carpets are known as knotted, tufted, woven and embroidered carpets. In preparing handmade carpets six steps are involved *i.e.*, processing of wool fibers, dyeing, designing of carpet, manufacturing, finishing and packaging. There are many centers situated in India for the production of handmade carpets in 13 states. Many handmade carpets get GI numbers *i.e.*, Geographical Indication due to their uniqueness. The handmade carpet industry is a labour-intensive industry. So, it has the potential to provide large-scale employment and an important source of income generation. So,

directly or indirectly it helps the country's economy.

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