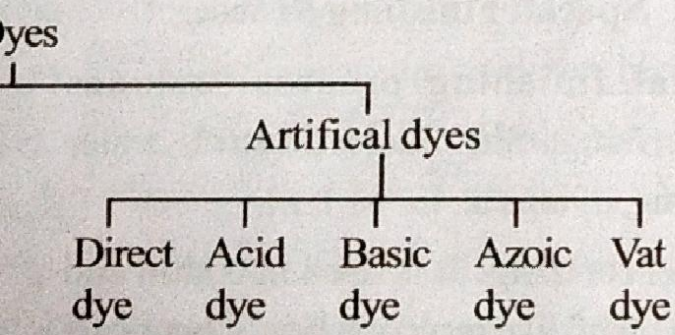
applied for this purpose.

5.3.6 Dyeing and Painting

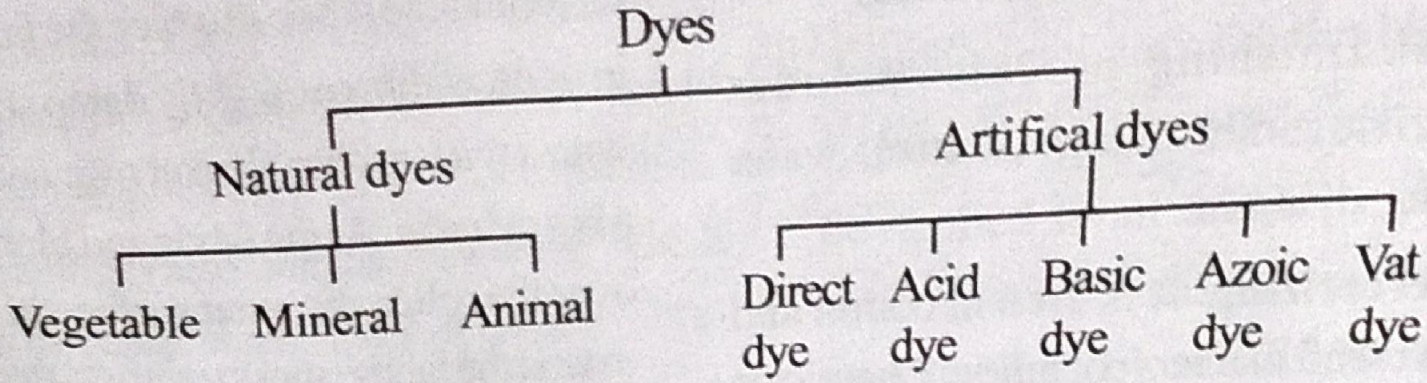
Finishing of fabric can be done by using dyes on it on printing the material with dyes. Don't you like to wear colourful dress? Yes, colour makes the fabric attractive. Do you know what it is? How it is used? Let us, see what they are and how they are applied on material.

A dye is a compound that can be fixed on a substance in a more or less permanent form that evokes the visual sensation of specific colour. Dyes are used on fabric for various reasons- like- it makes the material colourful and attractive, it can change the old material to reuse, stained material which are not suitable to wear but with the help of dyes, they can be changed and use, again.

Types of dyes : Dyes are prepared both from nature and chemicals, hence they are classified into two groups, namely i) natural dyes ii) Artificial dyes



lays rubber is replaced by synthetic resin



Vegetable Dyes : These are prepared from leaves, barks, pods, flowers, fruits of some trees. For example - henna leaves, onion peels etc.

Animal Dyes: These are prepared from insect, sea fish etc. For example cochineal, tyrian purple etc.

Mineral Dyes: These dyes are prepared from minerals. For example 'iron buff' which is prepared by soaking scraper of iron in water and vinegar for a particular period.

Artificial Dyes: These dyes are prepared from chemicals which is fast to sunlight, perspiration water, light and washing process. They are of different types-

i) Direct Dyes
ii) Acid Dyes
iii) Basic Dyes
iv) Azoic Dyes
v) Vat Dyes

i) Direct Dyes: These dyes are composed of 'amines' and 'phenol' and soluble in water. These can be applied to animal and vegetable fibre but generally used in cellular fibre. Direct dyes are not affected by sunlight and artificial light so they are used on curtain and draperies

ii) Acid Dyes: These are sodium and calcium salt of coloured organic acide. They are used on nylon, polyester and protein fibres but not suitable for cotton.

Basic Dye: These dyes can be used on silk or wool but in case of cotton some mondont should be used. They can produce brilliant colour on silk but these colours are not fast to light and washing.

Azoic Dyes: These are called Napthol dyes and are used in cold water baths. These dyes are suitable for cotton so they are used on towel and bed sheets etc.

Vat Dyes : These dyes are soluble in alkaline solution but insoluble in water. So they produce excellent fastness and are durable. Vat dyes are suitable for cellular fibre and can also be used on man made fibres under certain controlled condition.

5.6.6. Dyeing: It is the process by which dyes are applied on yarn or fabric. Dyeing is done at various stages of fabric production like before spinning, after spinning, after weaving or after knitting etc.

When dyes are applied before spinning it is done in the form of solution dyeing, stock dyeing or top dyeing. In case of solution dyeing, coloured pigment are added to the spinning solution whereas in stock

dyeing dyes and added to loose fibre before spinning. Top dying is similar to stock dyeing.

Regarding yarn dyeing, yarns are dried in skeins on packages before weaving. These packages are placed on carrier, put in the dyeing machine and dyes are circulated around this in two way motion. Yarn dyeing is cheaper than stock dyeing.

Dyes are also applied on fabric which is known as piece dyeing. In this process fabric is immersed in dye bath fully stretched and exert pressure on it so that dyes can be penetrated to the fabric and then squeeze out to take out excess of dye.

5.6. Printing: It is a process by which dyes are applied on fabric in the form of design. It produces colourful effect on the fabric. Printing is of different types-

a. Block printing
b. Roller Printing
c. Discharge Printing
d. Resist Printing
e. Screen Printing
f. Pigment Printing

a. Block printing : It is the oldest and simplest method of applying design to the fabric. In this process, blocks are made of wood, metal or other material in which design is carved on. These blocks are

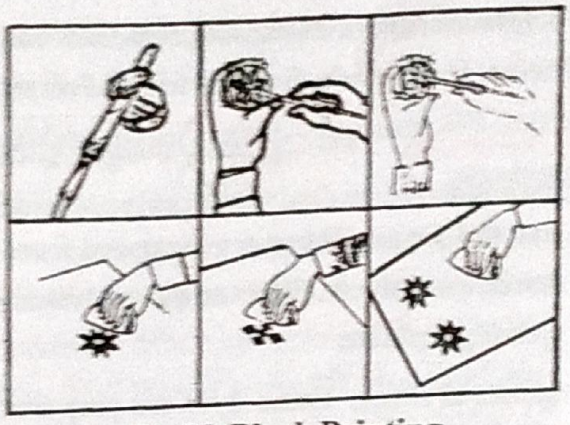


Fig.30 Block Printing

dipped in paste of colour and then pressed on fabric, so that coloured pattern is produced on the fabric. Different blocks are used if the pattern is multicoloured one.

It is slow process, costly and uniform pressure is required to transfer the colour.

2. Roller Printing: In this process, copper roller is used in which design is engraved and the colour is fed on to this roller with the help of a colour furnishing roller. The fabric is then passed around this roller. Then the fabric is passed through a drying and steaming chamber to fix the colour. The modern machine of roller printing is very sophisticated, in which instead of one roller, sixteen rollers are used and fabric can be printed with sixteen different colour at the same time. It is a fast and economical method of printing as thousand of fabric can be printed within a short time.

3. Discharge Printing : This is done on dark coloured fabric by removing colour from the material with discharge paste (chemicals). The colour of the fabric is removed in such a way that a pattern is made and the area where the dye is removed left white. This white area may be covered with another colour if desired. Cotton, Rayon are generally printed with this technique. The chemical which is used as discharge tend to weaken the fabric

4. Resist Printing: In this process, white fabric is printed with a paste, which prevents the fixing of dyes on area that we want to remain white and resist penetration of colour. Then it is dyed in the desired colour and the colour is fixed with steam and heat treatment. The paste is washed off to get a white pattern on coloured background.

5. Screen Printing: In this methods fabric to be printed is stretched on a table which is padded and covered with oil cloth. Then the screen is placed on the material and the paste of colour is brushed over its surface and then lightly pressed. The colour is allowed to dry. As soon as one colour has put, another screen is placed on top of the first and the second colour is put on the fabric. The process continues till all colours have been used.

6. Pigment Printing: In this printing, pigment dyes are used which is prepared from chemicals. They are insoluble in water and very fast to light and other adverse influences. Pastes are prepared from pigments, and printed on fabric by roller or screen printing. Then the fabric is heated to bind the pigment to the fabric.

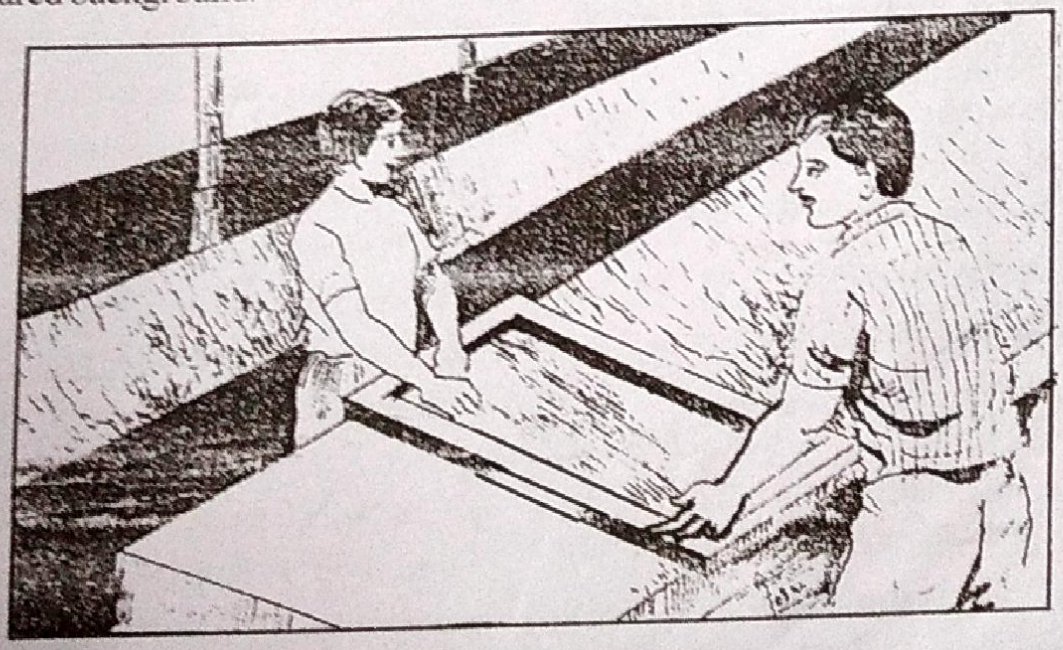


Fig. 31 Screen Printing