

# BUILDING DIGEST

CENTRAL BUILDING RESEARCH INSTITUTE INDIA



## PAINTING WOODWORK

### Introduction

Woodwork is painted for protection from weathering, for maintenance of hygienic conditions, for decoration and sometimes for control of illumination. Protection against weathering is effected by minimising changes in moisture content. Paints as a rule do not protect wood from decay but mould growth can be suppressed by incorporation of toxic chemicals in the paint. This Digest briefly describes the preparation of the surface to be painted, the types of paints to be used and the manner in which they are to be used.

The durability and protective value of a paint will depend on a number of factors such as continuity of the paint film and its adhesive, cohesive and mechanical properties. In order to build up a paint film of the desired characteristics, it is usual to use not one but a number of coats of paints of different composition each having its special function to fulfil.

### Painting System

A decorative and protective painting system for wood usually has three constituents, namely, a priming paint, an undercoat and a finishing paint. Paints that are meant to seal the porous surface of the wood and thus prime it for subsequent coats are called priming paints. The priming paint is applied directly to the surface of the wood. Finishing paints, which may be of any desired shade or finish, give the final appearance to the painted surface. The undercoat, which provides the greater part of the opacity of the paint system, is intermediate in properties between the priming and finishing paint and it should be compatible with both. It is preferable to obtain supplies of the primer, undercoat and finishing paint from the same manufacturer. Similarly, the nature of the finishing paint will decide the choice of undercoat, e.g., for a finishing oil paint an oil paint undercoat, and for a synthetic enamel paint a synthetic undercoat are necessary.

### Preparation of Wood Surface

The preparation of the surface to be painted is a very important step in painting. The woodwork must be reasonably dry (12—16% moisture). Excessive moisture in the wood often causes subsequent shrinkage

and cracking of the wood, and cracking, flaking, blistering and discolouration of the paint films. The surface to be painted must be clean and smooth. Grease and similar contaminants which impair adhesion should be removed with pieces of fresh cloth soaked in white spirit. Rough surface should be sanded with glass paper No. 1 and 2 and the surface dusted finally.

Knots in coniferous wood which may exude resin, should be cut out wherever possible and replaced with sound wood. Where this is not possible, two coats of "knotting" ( $\frac{1}{2}$  lb. of shellac in one pint of methylated spirit) should be applied on the knots before priming.

### Best conditions for painting

The weather conditions obtaining in the early life of the paint film influence the ultimate life of the paint. Hence painting should only be undertaken in fair or dry weather. Six to eight hours of diffuse sunlight is necessary for the proper drying of an oil paint film. Hence painting is best done before noon.

### Priming

Ready mixed paints are generally suitable for brush application as received. If any thinning is necessary, then turpentine only should be used for oil paints and the thinner recommended by the manufacturer only for synthetic enamel paints.

The priming paint should be worked well into the surface of the wood so that it fills the pores, satisfies the suction of the surface and provides a good key for subsequent coats. Priming paints are best applied by brush.

All joints in joinery work should be primed before assembly and those portions which will come in contact with masonry should receive an additional coat of primer or bitumen.

Primers suitable for use on a few Indian timbers are given below. For woods like teak containing substances which retard the drying of oil paints 'aluminium wood

primer' should be used. (This primer is quite distinct from aluminium finishing paints).

Timber	Primer
Teak, Sissoo, Kail	Aluminium wood primer
Chir, Mango	White lead primer
Deodar	White lead primer or Genuine pink primer.
Semul	White lead primer or Aluminium wood primer.

When the primer has dried, but not dried too hard, cracks, nail holes, etc. if any in the wood must be filled up. A putty made from white lead and linseed oil may be used. When it has dried, it is rubbed down and the surface dusted.

Wood treated with commonly used water-soluble preservatives such as zinc chloride, chromated zinc chloride, and chromated copper arsenate can be painted satisfactorily after it is redried. Other types of preservatives such as creosote and tar bleed through oil paints, and it is best to avoid painting wood treated with them. If such a wood has to be painted, exudates should be scrapped off and one or two coats of aluminium paint applied before using the finishing paint.

### Undercoating

When the primer has dried fairly hard, but not too hard, the undercoat is applied. Wood which has been primed for some time, especially with genuine pink primer requires to be flatted (rubbed lightly) with wet abrasive paper prior to the application of the undercoat.

The final appearance of the surface depends to a large extent on the undercoat. It is, therefore, necessary to ensure that the undercoat is uniform, opaque throughout and free from brush marks. The undercoat is allowed to dry for 24 hours.

### Finishing

The undercoat should be completely dry before the finishing paint is applied, otherwise it leads to cracking, peeling or loss of gloss and patchy appearance of the finishing paint. In applying the finishing paints the aim should be to produce an even, smooth finish free of brush marks. Special care is required in using

modern synthetic resin finishing paints which set very quickly and may not allow sufficient time for brush work.

For durability and good appearance it is better to apply two coats of the finishing paint. After the first coat has dried completely, it should be lightly flatted and the final coat then applied.

For woodwork which is partially or completely exposed to weather synthetic enamel paints based on alkyd resins should be used. In a completely sheltered location woodwork can, however, be finished with full gloss oil paints.

### Repainting

Paintwork which has failed by cracking, flaking or blistering requires to be removed completely.

Old paint is best removed by burning off. Spirit or solvent based paint removers may be used, but care should be exercised to see that any wax left behind by the paint remover is removed by washing down with white spirit. Otherwise, films of wax will hinder adhesion between the paint and the wood. After removing the old paint, the wood may be repainted exactly as new wood.

Chalking which is a progressive powdering of the paint film from the surface, does not require complete removal of the paint. Paint which is chalked or dirty but otherwise sound, should be washed thoroughly to remove grease, dust, etc. Sugar soap or mild soap powder is best for the purpose. Strongly alkaline cleansing agents are to be avoided. Plenty of clean water should be used to remove all traces of soap. The surface is then rubbed down with pumice or abrasive paper and allowed to dry. Bare patches of wood are then touched up with the primer and all cracks filled. The undercoat is applied and when dry, the finishing coat is applied.

### Brushes

Paint brushes are of many types and some manufacturers make two or three grades of the same kind. The majority of brushes used for nearly all types of painting are paint or varnish brushes made in widths from  $\frac{1}{2}$ " to 4" with a thickness of  $\frac{1}{4}$ " to  $\frac{7}{8}$ " according to the width of the brush. The larger size of brush have bristles  $2\frac{1}{2}$ "—3" long and the more refined grades are ground to a bevelled edge to save "working in".

Always use the largest brush that will do the job effectively and choose the best brush for the job. Good work requires good brushes.

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*There is a demand for short notes summarising available information on selected building topics for the use of Engineers and Architects in India. To meet the need this Institute is bringing out a series of Building Digests from time to time and the present one is the tenth in the series.*