



BUILDING RESEARCH NOTE

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DISTEMPERS

Distempers are comparatively cheap decorative treatments for walls and ceilings. They are classed as water paints and are easy to apply. Their function is mainly decorative and they are less durable than oil or emulsion paints. They can be applied on brickwork, cement and lime plastered surfaces and building boards such as plasterboard and insulating board. They are generally light in colour and provide a good reflective coating.

Type of Distempers

Broadly there are two types of distempers—nonwashable and washable. The former is often called soft or dry distemper. It consists of whiting with glue and pigment in suitable proportions. It is marketed in powder form, but is sometimes made at site by mixing size solution in a mixture of whiting and pigment. Glue is water soluble; hence dry distemper has no water resistance. If glue is replaced by casein and borax, a less water sensitive coating is obtained which develops sufficient water resistance in due course of time to become washable and recoatable.

Washable distemper contains a water resistant binder, usually an emulsion of a drying oil or varnish. Such distempers are also called oil bound distempers. They are marketed in paste

form to be thinned with water just prior to application. A few days after application, they acquire a moderate degree of washability and can be cleaned by sponging. By careful adjustment of the oil or varnish emulsion content, the durability of oil bound distemper can be enhanced. The distemper dries and hardens first by the evaporation of water and then by the oxidation of oil in the emulsion. The latter process takes several months. Recently, emulsions of high polymeric materials such as polyvinyl acetate (PVA) and certain grades of bitumen have been used in making good washable distempers. They are quick drying, easy to apply and odourless.

Properties

Distemper paint film is porous and allows vapour to pass through. Hence it is a good finish for new walls permitting them to dry out without damaging the distemper film. The coatings are generally thick and more brittle than other types of water paints. The distemper film shrinks on drying which may lead to cracking and flaking, if the surface to which it is applied is weak. Soft distemper containing higher proportion of glue shrinks appreciably on drying and this weakens the bond with the substrate. Periodical wetting and drying of coating may also result in cracking

and flaking. Thick coat of distemper is more prone to flaking than a thin coat. Being susceptible to moisture there is also a serious risk of failure in damp locations such as bathrooms and kitchens. Distempers exhibit poor washability as compared to normal oil and emulsion paints.

Soft distemper gives off a bad odour when the glue used is of poor quality. The odour may persist for some time or re-appear in humid surroundings. Washable distemper has a characteristic but less offensive odour at the time of application. PVA and bitumen bound distempers are practically odourless.

Surface Preparation

New surfaces : Generally little preparation of the surface is needed in case of new construction. All loose materials and efflorescence should be removed. The following points required special attention :

1. Dampness : Distemper has a certain amount of tolerance for damp surfaces, but if the surface is dripping wet, water in the wall will further thin out the applied coating and, in extreme cases, may cut channels through it, leaving unsightly runs. No attempt should, therefore, be made to decorate new walls if they are very wet. The entry of moisture into the walls is the principal cause of troubles like efflorescence, fading of colour and patchy appearance of the finish. It is therefore, essential to prevent the entry of moisture into the wall before decoration can be carried out successfully.

2. Alkalinity : It is quite safe to apply distemper directly over plaster. The pigments used are normally alkali fast and the oil content of oil bound distemper is too small to be affected by the alkali. But, if the oil content is high, saponification will take place, particularly over new plaster. In such cases an alkali resistant

primer paint is essential. No primer paint is however necessary for distemper bound with glue, casein, bitumen or polyvinyl acetate resin emulsion.

3. Variable suction : Plastered surfaces sometimes show variable suction due to varying porosity which becomes apparent by the non-uniform appearance of the paint. There would also be brush drag and build up of a thick film of distemper over porous area affecting the appearance of the finish. In such cases a preliminary coat of petrifying liquid should be applied. Normally there is a thin emulsion of oil or resin or both. For distempers based on PVA, a 5-10 per cent emulsion of PVA itself may be used. If the suction is not too great, the petrifying liquid may be used in place of water for thinning the distemper paint. This will not only increase the proportion of binder in the distemper considerably but will also give an even finish. When the surface is highly absorbent an oil primer is needed. An alternative method would be to wet the walls with water and to remove surplus water with a sponge. While the wall is still wet the first coat of distemper should be applied after thinning it with water to a fairly low consistency.

4. Efflorescence : It is a white crystalline growth of salt on the surface of the walls and if not removed, it would bring about flaking and powdering of the paint film. In severe cases it is safer to allow the growth to dispense itself by normal drying, the deposit being brushed off as it appears.

Surfaces to be redecorated

Refinishing a distempereed surface requires greater care. Non-washable distemper should always be completely removed by rubbing or washing with warm water. The common practice of applying dry distemper over existing finish should be discouraged as it results in a poor finish and sometimes leads to flaking. Washable

distemper, if in good condition, may be redecorated directly after dusting down or sponging. Washing with water should not be attempted unless the surface is very dirty. A build-up of more than 4 to 5 coats of distempers is not advisable as the paint film is likely to flake off. If cost prohibits stripping, it is best to apply a thin coat of size solution or an oil primer paint well thinned with white spirit to reinforce the strength of the existing distemper finish. The reinforcing coat should penetrate as deeply as possible. However, this practice is to be discouraged because petrifying liquid may not penetrate down to the substrate and flaking and peeling may occur along the lower layer of distemper. In case the surface to be decorated shows signs of flaking or loss of adhesion, the paint film should always be stripped off completely. It is often difficult to remove old coatings. Steam stripper readily softens the coating and it can then be removed with a stripping knife. The surface should then be allowed to dry before decoration. Alkaline or spirituous type paint removers are of only limited value for stripping old distemper paints.

Application

For soft distemper, a thin coat of limewash is sometimes applied first over new walls; followed, a few days later, by a coat of the distemper. A second coat may also be applied if necessary.

It is important to use distemper containing the same proportion of glue for both the coats. A better method of decoration is to give a first coat of soft distemper well thinned with size solution directly on the plaster followed by a second coat thinned with water to brushable consistency. Normally soft distemper covers 10 sq. m./kg when applied on new walls by brush in two coats.

Two coats of washable distemper are recommended on new surfaces. The first is well thinned with water to obtain maximum penetration and the second coat is applied as a thicker film. The covering capacity on new walls when applied in two coats is 3-4 sq.m./kg. For redecoration only one coat of distemper is recommended.

Spray painting of distemper is always superior to brushing. A uniformly smoother, thicker and more durable film is obtained by spraying.

Appearance of distempered walls and ceiling may be seriously marred by water stains, segregation of pigment and migration of salt if water gains entry into the structure. These stains are very obstinate and reappear even after a fresh coat of distemper is applied. A coat of thinned PVA emulsion pigmented with titanium dioxide equal in weight to PVA, prior to the application of distemper, helps to seal the stains.

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