CHAPTER 3

Painting and Plastering For Building's Finishing Works

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3.1 INTRODUCTION

Paint is a liquid surface coating. On drying it forms a thin film (60–150) on the painted surface. Paints are classified as oil paints, water paints, cement paints, bituminous paints and special paints such as fire proof paints, luminous paints, chlorinated rubber paints (for protecting objects against acid fumes), etc. The functions of the paints are: to protect the coated surface against possible stresses mechanical or chemical; deterioration physical or environmental; decorate the structure by giving smooth and colourful finish; check penetration of water through R.C.C; check the formation of bacteria and fungus, which are unhygienic and give ugly look to the walls; check the corrosion of the metal structures; check the decay of wood work and to varnish the surface to display it to better advantage.

Plastering is the process of covering rough surfaces of walls, columns, ceilings and other building components with thin coat of mortars to form a smooth durable surface. The coating of mortar is termed as plaster. Plastering is done to achieve the following objects:

- To protect the external surfaces against penetration of rainwater and other atmospheric agencies.
- To give smooth surface in which dust and dirt cannot lodge.
- To give decorative effect.
- To protect surfaces against vermin.
- To conceal inferior materials or defective workmanship

The plaster material should fulfill the following requirements :

- It should adhere to the background, and should remain adhered during all variations in seasons and other atmospheric conditions.
- It should be hard and durable.
- It should possess good workability.
- It should be possible to apply it during all weather conditions.
- It should be cost efficient.
- It should effectively check penetration of moisture.

3.2 CHARACTERISTICS OF AN IDEAL PAINT

The requirements are uniform spread as a thin film, high coverage, good workability and durability, sufficient elasticity to remain unaffected by expansion or contraction of the surface to be painted or by weathering action of atmosphere. The paints should also be: impervious to air and water, cheap and economical to form a hard surface.

3.3 WORK METHODOLOGY FOR PAINTING WORKS

3.3.1 Painting Internal & External Plastered Surface

a) The surface to be painted shall be cleaned from dust, dirt and plaster splashes and dry.
b) Any efflorescence shall be removed by wiping with dry coarse cloth and followed with a damp cloth.
c) The surface shall be thoroughly dry before any painting. The degree of dryness/wetness can be gauged by a meter.
d) Any crack or other imperfections shall be made good with a suitable sound / cement mixture. Patching work shall be allowed to dry out thoroughly before painting.
e) One external plastered surface.
f) Then, apply two coats of an approved type of first quality emulsion paint on internal plastered surfaces, and two coats of an approved type of cement paint on all external plastered surfaces.
g) Allow at least four (4) hours interval between completion of the first coat and application of the second coat.

3.3.2 Painting Wood Surface

- **Priming Wood Works**

a) The primer to be used shall conform to either BS 5082 or BS 5358.
b) The surface to be primed and painted shall be thoroughly cleaned to remove dirt, grease, etc. rubbed down and sanded smooth.
c) Any cracks and services on wood surface shall be applied with approved fillers, and the surface shall be rubbed down to an even, smooth surface.
d) Any knots in the woodworks shall be treated with a solution of shellac to prevent bleeding. Large or loose knots shall be cut out and replaced with sound wood or cut back and the surface shall be made good with fillers.
e) Dry, unprimed timbers arriving on site must be primed as soon as possible with the end grain given a double coat. On-site priming shall be carried out with the use of a brush.
f) Woodwork shall not be left longer than six (6) months without being given a further primer or undercoat and gloss.
g) All joinery timbers shall be primed before assemble and fixing.

- **Painting**

a) The primed surfaces shall then be painted with two (2) undercoats and one (1) finishing coats of high gloss enamel paint.
b) Each undercoat shall be rubbed down worth fine glass paper when thoroughly dry before applying the next coat.
c) Unpainted wood surfaces shall be stopped with approved filler and tinted to match the timber color. It shall then be rubbed down with fine glass paper to an egg shell finish and applied with two (2) coats of approved stain and coated with flat varnish.

3.3.3 Painting Metal Surface

- **Priming Metal Works**

a) Before priming, all metal works shall be thoroughly cleaned down to remove all dirt, grease scale and rust by wire brushing, scraping, grit abrasion and pickling or other means.
b) Then, the surface shall be primed immediately with an approved metallic primer.
c) Primed steel works shall be given a further primer or a protective coat as soon as sign of rusting appears.
d) Galvanised metal surfaces to be painted must be etched by chemical treatment or primed with a special primer, like zinc – chromate or other approved, applied strictly in accordance with the manufacturer's instructions.

- **Painting**

a) For general metal surface, two (2) undercoats and one (1) finishing coat of high gloss enamel paint shall be applied when primer has thoroughly dried.
b) For galvanised metal surfaces, one undercoat and one finishing coat of high gloss enamel paint shall be applied when the primer has thoroughly dried.
c) For all types of metals, at least 24 hours (1 day) drying time under normal weather condition between application of the coats.

3.4 WORK METHODOLOGY FOR PAINTING WORKS

3.4.1 Material

a) Sand shall be clean, sharp and fresh water river sand free from clay and other impurities. Samples of sand shall be submitted to Consultant for approval.
b) Mortar plasticizers shall conform to BS 4807.

3.4.2 Workmanship

a) Portland cement/ sand mixes for plastering and screeds shall be used within one hour of mixing. No retempering will be allowed.
b) Cement and sand plastering shall be composed of one part of cement to six parts of sand (by volume) with the addition of an approved plasticizer, if specified.
c) Chip of excess materials, laitance, etc. and make up faces of wells, columns and beams to true planes in the rendering or plaster specified for that area, including and dubbing out necessary to build up work to true faces or levels and to full in excessive gaps in brickwork or concrete. Dubbing out to be in the same proportions as that specified for the rendering or plaster for that area and the maximum thickness of dubbing out at any one stage shall be not more than 20 mm and the next coat to be applied 24 hours have lapsed on a well wetted surface.
d) Plaster shall be ruled between screeds at centers not exceeding 3.05m and brought to an even plumb finish. Plaster shall be prevented from drying out too quickly.
e) Completed plaster shall be brought to a smooth, flat egg surfaces that does not deviate more than a 3mm from a 1800mm (6 feet) straight edge.
f) All plastering shall be executed in a proper and workmanlike with true and even surfaces and all arises and angles shall be left perfect.

3.5 ADVANTAGES AND DISADVANTAGES ON BUILDING PAINTING AND PLASTERING

3.5.1 Painting

It is a good practice to plan the sequence of works such that the final coat will be painted only after the completion of other trades such as installation of doors and carpentry works. This will ensure that the final coat of paint will not be stained during the execution of other trades. All surfaces not intended to be painted must be protected. Doors, furniture, light fittings and similar items should be covered. Care should be taken when protecting surfaces that are sensitive to adhesive tapes.

The advantages of using paint are slow to dry and needs a long drying time between coats. It also needs to be applied by a professional as it has a tendency to run, curtain and so forth. Also, the higher the oil content in the paint, the less resistant it is to heat. Paint must be recoated periodically as it gets dirty easily.

3.5.2 Plastering

Plastering is the process of covering rough walls and uneven surfaces in the construction of houses and other structures with a plastic material, called plaster, which is a mixture of lime or cement concrete and sand along with the required quantity of water. Plaster is sometimes called **render** when using the exterior of the building. We use different types of plaster in building construction. And it is categorized based on the material used to make plastering paste.

If properly mixed and applied, a plaster coating creates a stronger and more durable wall finish than drywall. The chemical reaction that occurs when water evaporates out of the

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plaster mixture develops strong bonds in the mixture. Plaster is more resistant to knocks and dents in most cases. The lath, or backing, used behind the plaster also affects its strength. A modern metal lath or tough backing boards are more durable than the thin wooden lath strips used in historical houses.

Drywall produces copious amounts of dust when cut and sanded. Finishing the drywall to a smooth surface takes multiple days because the joint compound that seals the seams between boards needs to dry before another coat is added. Plaster doesn't produce any dust except for a small amount released when water is first added to the powder. It also doesn't require sanding and, if multiple coats are used, they usually are applied before the bottom layer is completely dried. A plaster wall takes less time to finish and produces less mess, but because it requires skill and practice not to mention an underlying substrate of wood lath or steel mesh installing plaster is definitely challenging.

When plaster cracks or crumbles due to shifting foundations or a strong blow to the wall, repairing the problem is tricky. Damaged plaster must be cut and scraped out without damaging the intact wall material. If the damage is severe, the lath or other backing requires replacement as well. Plaster also changes color slightly as it ages, so new patches are brighter and stand out if you don't paint the entire wall after the repair.

Despite the extra labor of hanging and finishing drywall, it tends to be less expensive than plastering. Workers who are trained in the art of plaster application charge more for their time due to their specialized skills. Veneer plaster, which involves a single finishing layer of plaster over a backing board, costs less than traditional two or three coat finishes. Veneer finishes are less durable but have an average cost closer to drywall.

Picture 1 : Painting Works

Picture 2 : Scheme Coating Works

Picture 3 : Plastering Works

Picture 4 : Scheme Coating & Plastering Works (Outside)

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