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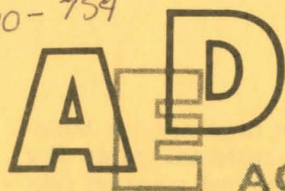
EC70-759 Agricultural Engineers' Digest : Paints and Painting

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AGRICULTURAL ENGINEERS' DIGEST

Introduction

All opaque paints are composed of pigment and vehicle. The pigments contribute color, opacity, weather resistance, and other properties. The vehicle consists of a nonvolatile portion, or binder, and a volatile portion, or thinner. The binder contributes adhesion to the surface, flexibility, and also controls the permeability of the film. The thinner, or solvent, regulates the consistency, application properties, and leveling. Other ingredients to control fungus, settling, and other properties may be present. A paint formulation may contain as many as 15 different ingredients.

Water Paints

All water paints use water for at least part of the thinner. Water paints may be latexes, usually acrylic, polyvinyl acetate (vinyl or PVA), or styrene-butadiene ("rubber-base"); they may be emulsion paints, usually based on linseed oil or alkyd resins; or they may be water solutions, such as calcimine, casein paints, or dry-powder portland cement paints. Some new water-soluble resins have recently been developed, but are not yet widely used.

Water-thinned paints have a number of advantages, including ease of application, ease of clean-up, quick drying, and low odor. Their outstanding advantage is that they can be applied to damp surfaces, and can be applied during humid weather.

Latex paints are the most commonly used water paints. Latex paints are generally highly alkali-resistant, which allows their use over freshly applied concrete or plaster. They are usually porous, allowing any moisture in the wood or masonry to escape without blistering the paint film. On the other hand, they are generally nonpenetrating, which makes their use on old, chalky paint surfaces very risky. Also, if the moisture coming through the film carries any color, as it may with red cedar or redwood, the paint is likely to be stained. Porous paints should not be used over unprimed iron, since moisture going through the film will rust the iron, and the iron oxide formed will stain the film.

Solvent Paints

Solvent paints contain pigments, and a binder of oil, varnish, or a resin dissolved in a volatile solvent. The solvents are usually flammable, although many have relatively high flash points. Solvent paints dry by solvent evaporation, oxidation, polymerization, or some combination of these reactions. Conventional exterior house and barn paints have a drying oil—usually linseed—as the binder. Harder coatings, such as trim and machinery enamels, use either alkyd resins or oleoresinous varnishes, such as tung-phenolic, for the binder. Exterior masonry paints are likely to be made with more alkali resistant resins, such as chlorinated or synthetic rubber types. Numerous other resins, such as epoxies, urethanes, and polyesters are used for specialized purposes.

The pigments in a solvent paint are selected for the color and end use of the product. Most exterior house paints contain titanium dioxide, white lead, zinc oxide, and extender pigment. The amount of chalking can be regulated by the grade of titanium dioxide used. White paints usually chalk in order to keep the surface white and clean. Tinted paints, or those designed for tinting on the job, are more chalk-resistant. Chalk-resistant paints are recommended for use on wood over a brick wall where the chalk running down on the brick would be objectionable.

Pure white lead in linseed oil is a very durable paint and used to be the standard exterior paint. It has lost popularity because it is expensive, does not hide well, and darkens and collects dirt on exposure. Use lead-free paints where darkening from hydrogen sulfide would be objectionable and where livestock or children might eat any loose flakes.

Paints containing zinc oxide should not be used as primers on the first coat for wood surfaces because zinc paints are usually prone to blistering.

Barn paints are usually pigmented with iron oxide, which is extremely durable, but limited in its color range. The most durable barn paints contain about 55 percent pigment of which at least 30 percent should be iron oxide.

The pigmentation of enamels is determined by the color desired. White enamel is primarily titanium dioxide.

Interior paints are almost always lead-free since the durability of white lead is not needed. White lead is expensive, and there is the hazard that children or animals may eat flakes which become detached.

INDOOR PAINTING

There are three basic steps to follow for painting. The first is to select the right paints for the various surfaces to be painted. The surfaces must then be adequately prepared, and finally, the selected paint must be properly applied.

Selecting Paints

Choose paints that will provide cleanliness, durability, and beauty. Also choose paints that will fit in with the room, and can be used over the material and texture of the surface. Consider the type of finish that is desired. Glossy finishes clean easily and look shiny. Flat finishes absorb light, reduce glare, and show dirt and dirt marks quite readily. Semi-gloss finishes have properties of both glossy and flat finishes.

Color

The best color for a room or project is often hard to determine. Color can make things seem larger or smaller than they really are, can be used to highlight areas of importance, and will affect the psychological reactions of people and animals. Interior decorators and some paint dealers can help in selecting appropriate colors.

The Light Reflectance of Various Colors

White.....	80%	Salmon.....	53%
Ivory (Light).....	71%	Pale Apple Green.....	51%
Apricot-beige.....	66%	Medium Gray.....	43%
Lemon Yellow.....	65%	Light Gray.....	41%
Ivory.....	59%	Pale Blue.....	41%
Light Buff.....	56%	Deep Rose.....	12%
Peach.....	53%	Dark Green.....	9%

Livestock Buildings

The walls and partitions in farm service buildings sometimes need a very resistant paint. For surfaces that must withstand almost constant rubbing of animals, and for surfaces that must frequently be cleaned of manure and dirt, apply epoxy paint. Epoxy paints come in two containers, must be mixed carefully, are washable and quite durable, and are usually more expensive than ordinary paint.

For surfaces that will not be exposed to excessive wear or washing, use a good moisture-resistant paint.

Surfaces

Walls and ceilings in bathrooms and kitchens, and trim around doors and windows should be painted with enamel or semi-gloss paints as these areas need to be cleaned often.

Plaster that has not aged at least three months, should first be primed with a "lime- or alkali-resistant" paint.

For acoustical tile, use flat paints thinned according to the manufacturer's directions.

Woodwork, paneling, and wood floors to be finished with a natural finish may first need to be stained and filled with wood filler. Talk with a cabinet maker and your paint dealer for the procedures to use for staining and filling.

Some common finishes applied to concrete floors are epoxy and polyurethane paints, linseed oil paints, and butadiene styrene paints. Your paint dealer can help you select the paint best suited for your surface.

Paint or Finish to Use Indoors

	Aluminum Paint	Casoin	Cement Base Paint	Emulsion Paint (Incl. Latex)	Enamel	Flat Paint	Floor Paint Or Enamel	Floor Varnish	Interior Varnish	Metal Primer	Rubber Base Paint (Not Latex)	Sealer Or Undercoater	Semi-Gloss Paint	Shellac	Stain	Wax (Emulsion)	Wax (Liquid Or Paste)	Wood Sealer
Floors																		
Asphalt Tile							X									X		
Concrete							X	X								X		
Linoleum													X			X		
Vinyl and Rubber																X		
Wood							X.	X.					X	X.		X.	X	X
Masonry -- Old	X	X	X	X	X.	X.				X	X	X.						
New			X	X	X.	X.				X	X	X.						
Metal																		
Heating Ducts	X				X.	X.			X	X		X.						
Radiators	X				X.	X.			X	X		X.						
Steel Cabinets					X.	X.			X	X		X.						
Stairs																		
Treads							X	X					X	X	X			X
Risers					X.	X.			X				X.	X	X			X
Walls and Ceiling																		
Kitchen and Bathroom					X	X.				X	X	X.						
Plaster		X			X	X.				X	X	X.						
Wall Board					X.	X.				X	X	X.						
Wood Paneling					X.	X.			X	X	X	X.	X	X		X	X	
Wood Trim					X.	X.			X	X	X	X.	X	X		X	X	
Windows																		
Aluminum	X				X.	X.			X	X		X.						
Steel	X				X.	X.			X	X		X.						
Wood Sills					X.			X			X				X			

X. Black dot indicates that a primer or sealer may be necessary before the finishing coat (unless surface has been previously finished).

Preparing To Paint

New Surfaces

New surfaces, except concrete and plaster, can be painted after they are cleaned of all dirt and grease. Holes or other imperfections made during construction should be repaired before painting begins.

Concrete floors should not be painted until the concrete has aged at least 3 months. Slick concrete floors should be roughened before being painted. Treat slick floors with 1 gallon of muriatic acid mixed in 2 gallons of water. Brush the acid into the floor until it fizzes in every area. Rinse the acid off with clear water, examine the floor, and re-treat the spots that were not roughened. Coarse floors with an even texture can be painted without an acid treatment.

Paint will not fill the pores of brick, block, or stucco. These surfaces must be plastered if a smooth surface is desired.

Old Surfaces

Remove all dirt, grease, and wax. A dry rag or mop will usually remove enough dirt. A kitchen usually requires washing with a mild detergent to remove dirt and grease. Wax can be removed with turpentine, mineral spirits, or a wax remover.

Before painting wood that contains an oil stain, wash the surface with mineral spirits, sand, and apply a good sealer or undercoat.

Remove all door hardware, switch plates, and other fixtures that would interfere with painting.

Fill all cracks and holes. Small hairline cracks in plaster can be filled with spackling compound. Larger cracks and holes should be made into an inverted "V" shape and filled with plaster or spackling compound. The "V" shape provides some anchorage for the filler. All repaired cracks and holes should be sanded smooth after the filler is completely dry.

Holes, cracks, and dents in wood can be filled with many available types and colors of wood fillers. Be careful not to smear the filler on adjacent wood. Smooth the repair after it has dried. Sand and prime all bare areas of wood.

If a surface is glossy or very smooth, roughen it slightly with sandpaper or other abrasive. In some cases, washing it with a strong detergent, followed by rinsing, will be sufficient.

Holes and cracks in masonry and concrete can be filled with cement-sand mortar or prepared "crack filler," special caulking cement or latex concrete patching kits.

Holes in metal can be filled with silicone rubber, plastic, steel or aluminum, and special epoxy metal glues.

Apply a moisture-resistant prime coat to all repaired cracks, joints, and patches.

Application Procedures

Apply a prime coat to new plaster, repaired surfaces, and unpainted surfaces.

Apply paint when the room and paint temperature is about 70°F. Provide cross ventilation to shorten drying time, and remove odors and fumes. Fumes are especially harmful to pet birds.

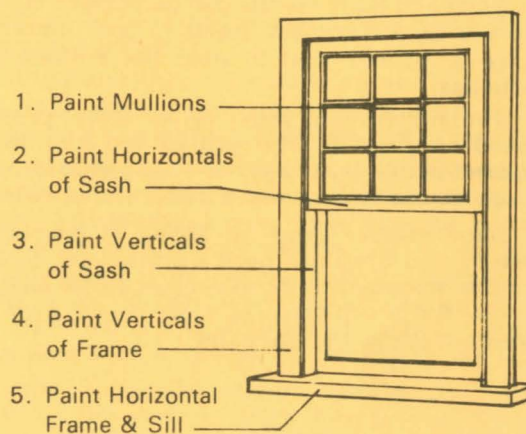
When painting a ceiling, work across the width rather than the length of the room. Don't try to paint a strip more than two feet wide. This will enable you to begin the second strip before the first has dried. It is best to use flat paint, somewhat thinned, for painting acoustical tile.

Paint the woodwork only after the walls are completely dry.

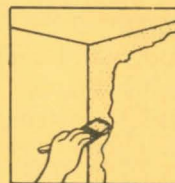
Wipe up splatters or drips while they are fresh. Within 24 hours after painting, remove all paint flecks from hardwood floors with steel wool and hardwood floor "wax and cleaner."

Place paint-filled rags in a fireproof container or burn immediately when discarded.

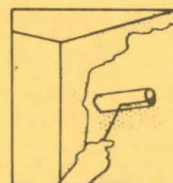
Painting Windows



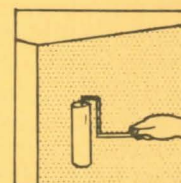
Using a Roller



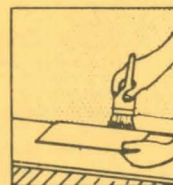
Step 1



Step 2



Step 3



Step 4

At Floor or Baseboard

OUTDOOR PAINTING

The three basic steps of painting also apply to exterior painting. See *INDOOR PAINTING*.

Selecting Paints

Choose paints that have the desired color, can be applied successfully over the material needing paint, and can withstand the weathering or special conditions in your locality. It is good economy to buy a quality paint. Quality paint will lengthen the time between repaintings, and thus reduce labor costs.

Tinted paints have a slightly longer service life than white paint, and dark-colored paints last even longer.

Color

Choose the paint color that will blend with the surroundings of the house, and also will satisfy your own preferences. White or light-colored buildings and objects attract attention and tend to become the center of interest. Darker colors such as reds, browns, greens, and grays are modest and tend to blend the building or object with the background.

Surface Material

Wood and most metals can be painted with either solvent or water base paint. These materials require a primer coat to seal the surface against moisture.

The ingredients required in metal primers are listed on page 6. The primer for trim and dark-colored paints is sometimes of a special formulation. Use a tinted primer under dark-colored paint.

Some lumber used for siding is primed at the factory and does not need a prime coat. Follow the lumber manufacturer's recommendation on the paint to use for a top coat. In most cases, they recommend a standard house paint.

Chalk-resistant paints should be used where chalk run-down would discolor masonry or metal. Where run-down would not be objectionable, the self-cleaning chalking paints could be used.

Porches, steps, and screens should be painted with abrasion-resistant paints. There are several types of paint that are specially formulated for this kind of surface.

Special solvent-thinned trim paints are available for wood trim, screen frames, shutters and other small areas of a house.

Rough-sawn lumber, dense smooth woods, and knotty or flat grain boards or plywood of oak, pine, spruce and fir can sometimes be more economically stained with a heavy pigmented oil stain rather than painted. See *Forest Products Laboratory Stain*, page 7.

Old painted surfaces often present special problems. As an example, chalky surfaces will not give a sound base for water-thinned emulsion paints, but may be adequate for water-thinned linseed oil paints. Be sure to follow the instructions of the manufacturer and paint dealer. They will likely recommend a solvent-thinned primer for emulsion paint.

Another example is old painted surfaces that have blistered, peeled, or cracked. There are special blister-resistant paints available that can help keep this from happening again. But, the cause of the blistering and peeling must first be found and repaired. See *Moisture Problems*, page 7. Blister-resistant paints may be either solvent or water-thinned, and must be applied as directed.

Masonry and asbestos-cement surfaces should be painted with alkali-resistant paint. Some latex paints, portland cement paint, and solvent-thinned stucco and masonry paints are all satisfactory for masonry. Be sure that you buy alkali-resistant paint.

Paint or Finish to Use Outdoors

	Aluminum Paint	Cement Base Paint	Exterior Clear Finish	House Paint	Metal Roof Paint	Porches-Deck Paint	Primer Or Undercoater	Rubber Base Paint	Spar Varnish	Transparent Sealer	Trim-And-Trellis Paint	Wood Stain
Wood												
Natural Finish		X										X
Porches Floor					X							X
Shingle Roof												
Shutters				X.		X				X.		X
Siding	X	X		X.		X				X.		
Windows	X			X.		X				X.		
Metal												
Copper				X.		X	X			X.		
Galvanized	X.			X.		X	X			X.		
Iron	X.			X.								
Roof				X.	X.							
Siding	X.			X.						X.		
Windows -- Aluminum	X			X.						X.		
Windows -- Steel	X.			X.						X.		
Masonry												
Asbestos Cement				X.		X	X			X		
Brick	X	X		X.		X	X			X		
Concrete Block	X	X		X.		X	X			X		
Concrete Porches Floor					X		X					
Stucco	X	X		X.		X	X			X		

X. Black dot indicates that a primer or sealer may be necessary before the finishing coat (unless surface has been previously finished).

Conditions

A local paint dealer can tell you what local conditions should be protected against—fumes, high humidity, or some special weathering condition. Choose a paint formulated to resist the special conditions of your locality.

Preparing To Paint

All surfaces must be cleaned of dirt, oil, scale, and other impurities. Surfaces should be cleaned and dusted just prior to painting.

All materials and equipment needed for painting should be collected and ready for use. These would include the paint, extra cans for mixing, paddles for stirring, strainers to take out lumps that may be in the paint, and the material to clean painting equipment.

Also needed is the means of applying paint—brushes, spray equipment, or rollers. A 4- to 5-inch brush works well for large areas; a 1½- to 2-inch brush for trim; and a sash brush or narrow brush for narrow strips as those in windows.

Nylon bristle brushes are better than natural bristle brushes for latex paints. A natural bristle brush should be conditioned by soaking it in linseed oil for a day or two before painting oil paints. Soaking is not needed for nylon bristles or water-thinned paints.

Follow the manufacturer's recommendations carefully when using rollers or spray equipment.

Other equipment that may be needed: rags for cleaning; drop cloths for protecting porches, floors, roofs, shrubbery, and plants; ladders or scaffolding.

Preparing Wood Surfaces

New Construction

Wood siding should not contain knots or sappy streaks. If it does, the knots and streaks should be cleaned with turpentine and sealed with a good knot-sealer.

Wood siding and trim should be protected from the weather until it is installed. Structural defects must be repaired. Nail heads should be set below the surface of the wood, primed, and then puttied. This is especially true for rusting type nails. Always use non-rusting nails if possible.

Smooth any rough spots with sandpaper or other abrasive. Always dust just prior to painting.

Repainting

Wash dirty surfaces with a mild synthetic detergent and rinse thoroughly. Remove all rust marks and set all nail heads, prime, and apply putty. Any loose siding should be renailed with non-rusting nails.

Remove any rough, loose, flaking, or blistering paint and repair the cause of the problem. See *Moisture Problems*, page 7. If deep cracking, blistering, or alligatoring is extensive, remove ALL old paint, repair defects, and prepare to paint as new construction. Defective paint can be removed with a paint remover, scraper, sandpaper, wire brush, or other good abrasive. Do not use a blow torch unless you are an experienced user.

Preparing Metal Surfaces

Remove all rust, oil, and grease, and smooth roughened surfaces. A wire brush, steel wool, or sandpaper will usually remove rust and rough areas. Remove oil and grease with solvents such as mineral spirits, and then rinse thoroughly. A primer must be applied immediately after cleaning. See *Painting Metal*, page 6.

Preparing Masonry Surfaces

Patch or caulk all cracks and indentations, and apply an alkali-resistant prime coat. Install drain tile, drains, or water barriers where underground water pressure may cause water to come through a wall or floor. Paint will not hold back ground water under pressure.

New masonry and concrete basement walls should have their underground exterior surface painted with asphalt waterproofing before dirt is backfilled.

Remove all dirt, loose particles, oil, efflorescence, and old paint that is loose, peeling, or heavily chalked. Efflorescence is a white salt-like material adhering to concrete or mortar and is caused by moisture which dissolves salts within masonry and carries it to the surface. Dirt, efflorescence, and loose particles can usually be removed by washing the surface with a cleaner or detergent and water.

Poured or precast concrete may have a "release agent" on the surface which must be removed with solvent or by several months of weathering. Loose, peeling, or heavily chalked paint can be removed by sandblasting. If old paint is just moderately chalked but is otherwise "tight" and non-flaking, it should be coated with a conditioner if the surface is to be repainted with a water-thinned coating. Follow the paint manufacturer's recommendations.

Masonry floors, decks, porches, and patios may require a special treatment to provide an adequate base over which to apply paint. Manufacturers of paints for this kind of surface usually give instructions on how to prepare these surfaces. See *Preparing to Paint New Surfaces*, page 3.

Iron, copper, or other metallic objects imbedded in masonry surfaces to be painted with water-thinned paints must be primed with a good anti-corrosive primer.

After all impurities are removed or primed, wash or hose the surface. Do not wash or hose the surface if efflorescence was present. Allow the surface to dry thoroughly if solvent-thinned paints will be applied. The surface need not be completely dry for water-thinned paints.

Application Procedures

Apply paint in reasonably clean, dry weather with the air temperature above 40°F., preferably 50°F. or higher. The paint temperature should be about 70°F. for easy stirring and spreading. Apply solvent paints only when the surface is dry. Several days' drying time may be needed after a rain. Water-thinned paints may be applied to a surface that is damp but free of liquid water. Do not paint during windy or dusty weather, or when insects may get caught in the paint coat.

In hot weather, paint surfaces after they have been exposed to the sun and are in the shade. If painting must be done in the hot sun, avoid over-thick application of the paint. Brush the paint out well.

Most paint manufacturers recommend applying a prime coat of paint to seal the surface against moisture. Use a primer recommended by the paint manufacturer. Apply a prime coat to all new surfaces, to all repaired surfaces, to surfaces that have little old paint left, and to old surfaces that are very chalky. Prime after all the repairing and cleaning is completed, but before filling with putty.

The Forest Products Laboratory recommends applying a water-repellent preservative before priming new wood that has not been so treated. The preservative contains penta and should be allowed to dry for two warm, sunny days before applying the primer. Ask your paint dealer about the recommendation of his paint manufacturer.

Use a zinc-free oil-base primer for new wood and spot priming when the top coats will be a solvent-thinned paint. Most manufacturers recommend using a solvent-thinned primer when the top coat will be an exterior emulsion or latex paint.

Allow a solvent-thinned prime coat to dry about three days in fair weather and four days in humid weather, unless the instructions on the label indicate a shorter time is satisfactory.

After a surface is primed, apply any caulking that is needed. Examples: around window and door trim; where different materials come together—joints between flashing and bricks; joints in wood siding; and at corners of buildings.

Apply the finish coats of paint immediately after the primer has dried sufficiently and all caulking has been done. If you cannot apply the finish coats within a month, wash the surface thoroughly before applying the top coats.

Allow about 48 hours' drying time between solvent-thinned finish coats. Two coats of latex paints may be applied in one day.

Three coats of paint are recommended for new work—one primer and two finish coats. However, properly designed and properly applied two-coat systems will usually give good durability. Three top coats are often recommended for south exposures, but other exposures should not have more than two top coats. When repainting, if a surface is in good condition, one additional finish coat is often sufficient. If the old paint is very thin, two coats should be applied.

Place paint-filled rags in a fireproof container or burn immediately when discarded.

Painting With a Brush

Always paint along the grain of wood, keeping an even pressure on the brush. Use long sweeping arm strokes. Dip a brush into the paint to about one-third the length of the bristles. Tap off the excess paint on the inside of the can. Do not scrape the brush across the rim. Apply the paint from the end of the brush, not from the sides.

A house or building should have the sash, trim, and doors painted first. On siding, begin at a corner or under the eave, and paint the under edge first. Paint from top to bottom, then begin again at the top. Complete one sidewall before starting another.

Always apply paint to an unpainted area and work the paint toward the wet edge of previously painted portions. Apply a finish coat generously, then brush out. When a section has been covered, go over the entire area with light, quick strokes to smooth all brush marks and laps, and to recoat any thin spots.

Cleaning Brushes

Soak brushes in the solvent recommended by the paint manufacturer. Loosen the paint within the bristles with the fingers. Rinse thoroughly with solvent. It is often recommended to then wash the bristles with mild soap suds and rinse thoroughly with water. Twirl the brush between the hands to remove excess water, and comb the bristles carefully. Wrap the brush in heavy paper, add several moth-repelling flakes, and store it laying flat.

Painting Metal

Paint only when the surface is clean and dry. Apply a primer to new metal and to metal that has had old paint removed. Good primers will have zinc-dust, red lead, zinc yellow, blue lead, oxide of iron, or zinc-dust oxide as one of its ingredients. Zinc-dust paints must be stirred frequently.

After the primer has dried sufficiently, apply one or two coats of finish paint. Most ordinary house or trim paints can be applied as finish coats over any of the recommended prime coats. For the finish coats on gutters, downspouts, flashings, nail heads, hardware or grilles, use conventional house paints or exterior enamel. Steel or aluminum windows can best be coated with house paint, aluminum paint, or exterior enamel. Window screens should have a special screen enamel applied.

Painting Galvanized Metal

It is not necessary to weather or treat galvanized steel before painting. Do clean the surfaces outlined in *Preparing Metal Surfaces*, page 5.

After cleaning, prime areas which have no galvanizing, due to handling or age. Then apply finish coat or coats.

Zinc-dust paints in an oil, alkyd, or phenolic base adhere best to galvanized surfaces under most conditions. Cement paints in an oil base work nearly as well, and are recommended where color is desired. Latex paints made for galvanized steel

are being used but have not been tested as extensively as other metal paints. These latex paints seem to be especially suitable for single-coat coverage.

A recommended paint will usually not peel if applied properly. One coat of paint will do the job, but two coats are usually better.

Finishing Furniture, Trellises and Fences

Finish outdoor furniture with exterior enamel or penetrating pigmented stain. Never use ordinary solvent house paint as it will chalk and rub off on clothing. Before applying enamel, apply an enamel primer to wood furniture, or a special metal primer to metal furniture.

A fence or trellis will usually last longer if the posts and other parts are made of decay-resistant wood, or of wood that has been preservative treated. Use wood that is treated with a nonbleeding preservative if you want to paint. Apply a good primer before applying paint. The finish coats may be ordinary house paint; most paint manufacturers have formulated special paints for trellises and arbors. See *Forest Products Laboratory Stain*.

Moisture Problems

Blistering is primarily caused by moisture, usually from rain and dew, that gets behind the paint film. As the moisture is heated by the sun, it expands and tries to come out through the paint. If the paint film is a solvent paint, a blister will form and eventually break and peel. If the paint film is a water-thinned or blister-resistant paint, a blister will probably not form.

When a blister breaks, it allows moisture to get behind the paint, which causes more peeling and trouble. The surface must be cleaned of all old paint, primed, resealed, and repainted after the moisture source is eliminated or controlled.

The best way to eliminate blistering and peeling from moisture is to prevent moisture from getting behind the paint. Some procedures that often eliminate moisture problems in houses are listed below.

- Install a vapor-barrier—4-mil polyethylen or equivalent—under the plaster or wallboard.
- For new wood and before repainting, apply water-repellent preservative under edges and at end joints of siding boards.
- Use a linseed oil-base primer free of zinc oxide pigments.
- Vent basements and crawl spaces so dampness and moisture seeping through walls is removed.
- Use kitchen and attic fans to remove the high amounts of moisture usually found in the kitchen and attic.
- Vent automatic clothes dryer to the outside.
- Install small screened vents for wall cavities and roof overhang.

- Check flashing and caulking. Caulking should be around windows, doors, and corners.
- Remove any dirt or shrubs that touch the siding. Keep the ground line at least 6 inches below the siding.
- Consider using blister-resistant paint.
- Paint inside surfaces of exterior walls with aluminum paint.

Homemade Masonry Paint

An inexpensive and attractive masonry paint is made from hydrated lime, white portland cement, and water. To make this paint, mix 1 part of hydrated lime with 5 parts of white portland cement. Add water until the mixture is the consistency of canned milk. Do not mix more than can be applied in about three hours. Dampen the surface with water before applying the mix. Apply the mixture with a brush or by spraying. Spraying is easier, but a short, stiff-bristled brush will fill some pores. If the pores in rough cinder block need to be completely filled, add 2 parts of fine sand to the mix. High grade mineral coloring may be added to the mixture to obtain light tints.

The paint should dry slowly to allow proper curing. After the paint becomes firm, keep it damp with sprayed water for about 48 hours.

Surfaces painted with this masonry paint may be difficult to repaint with other types of paint unless a sealer is first applied.

Natural or Stained Finishes

There are two types of natural finishes—surface coating finishes and penetration finishes. Surface coating is not very durable and must be refinished every year or two to prevent discoloration in the woods. Some penetrating finishes are very durable.

Spar varnish or synthetics are applied in three coats. They are transparent and if the wood is fully exposed, it must be refinished every year and sometimes more often. These finishes tend to build up on the surface and crack. Removal of the finish to the bare wood is necessary when this occurs.

Penetrating finishes include wood sealers or drying oils such as boiled linseed or raw linseed to which paint driers have been added. The finishes may contain a coloring pigment. These finishes soak into the wood and are applied in two coats on new wood and one coat when refinishing. It is best to add fungicides to prevent mildew.

Shingle stains are opaque and more nearly represent a paint. They are particularly suited to rough surfaces and will normally give four to five years' service. They are not suited for use on doors, windows, and similar trim that require a preservative coat.

Forest Products Laboratory Stain

Ingredients and methods of application for a stained finish on wood is explained in detail in the Forest Products Laboratory publication, FPL-046. You can obtain a copy from the Forest Products Laboratory, USDA, Madison, Wisconsin 53705.

The stain, based on durable red and brown iron oxide pigments, adequately applied to rough surfaces will last up to 10 years. When refinishing is necessary, the rough surface-stain system is easily renewed without extensive surface preparation.

Follow the Manufacturer's Recommendation

Today's paints are greatly improved over those made twenty years ago. Each manufacturer has formulations that he has found through tests to be effective, and the directions accompanying any specific paint should be exactly followed to obtain the finest results. Read the label, it will tell you more than any digest written.

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