The Pennsylvania State University Workforce Education and Development Competency-Based Teacher Education

Lesson Plan Template

Name of Instructor: Jeff Weyer
Program Title: Construction Trades
Course Title: 1700 Interior Finishes
Unit Title: 1701 Identify paint and stains
Lesson Title: FID Lesson 5 Water Based paints
Lesson Performance Objective: Learn the uses of various water paints
Time (length of lesson): 90 Minutes
Equipment and Materials needed: Packet Task Module 07211 and work sheet in handout
Academic Standard(s) and Anchor(s) and/or Common Core Standard addressed by this lesson:

Technical Standard(s) or Competencies taught in this lesson: CC.3.5.9-10.A Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions CC.2.1.HS.F.2Apply properties of rational and irrational numbers to solve real-world or mathematical Problems.
Introduction There will be a short introduction lesson covering what is expected when this packet is passed out covering water based paint.
Body: Students will have to read Task module 07211 Water based paintsThen complete assigned questions on worksheet. **There will be an Email sent out with a link to a zoom meeting on the morning of the FID day where I will have online class with a Power point presentation and will cover the packet with the students.**
Summary: We will review the material the day the students return to school with a question and answer session.

Student Assessment (attach a copy of the assessment instrument that will be used to assess students for this lesson): (UDL- Multiple Means of Expression) **Formative Assessment(s) A ten question quiz will be given the next day** **Summative Assessment: Completed work sheet.**
Universal Design for Learning (UDL **Multiple Means of Engagement: Paper Packet and zoom meeting** **Multiple Means of Representation: Module and power point** **Multiple Means of Expression:**

FID Worksheet 5

FINAL TEST

Task Module 07211

WATER-BASED PAINTS/COATINGS

NAME: _____ DATE: _____

TRUE OR FALSE:
For each of the following statements which is true, circle the "T" at the left; for each false statement, circle the "F".

T F 1. Paints are composed of pigments and solvents only.

T F 2. The solid portion of the paint is the solvent.

T F 3. The pigment is responsible for most of the qualities of the paint.

T F 4. Coatings sometimes do not have pigments.

T F 5. Water-based paints are mostly emulsion paints.

T F 6. Epoxy coatings are usually two-part coatings.

T F 7. Alkyds are natural resins.

T F 8. Primers keep the topcoat from penetrating into the substrate.

T F 9. Water-based primers are most used on wood surfaces.

T F 10. Most water-based paints dry faster than most solvent-based paints.

T F 11. Generally, the less porous the surface, the better the adhesion.

T F 12. The most important value of polyurethane is its resistance to alkali.

T F 13. Most water-based paints can not be used in hospitals.

T F 14. Block fillers cover less area than most paints.

T F 15. Water-based paints are not compatible with solvent-based primers.

TASK MODULE 07211

WATER-BASED PAINTS/COATINGS

There is a need to protect, decorate, and make sanitary surfaces under many different conditions. This need has helped to create thousands of varieties of paints and coatings.

This module on water-based paints and coatings will include information on the following: technical data, solvents, substrates, compatibility, preparation to apply, and desired performance of primers and topcoats. Some experts use the terms "water-reducible" or "water-borne" instead of "water-based". Throughout, the latter term will be used.

By studying this module, the painter will be able to (1) identify various water-based primers and topcoats and (2) relate these primers and topcoats to: (a) their appropriate technical data, (b) the substrates that are best for each, (c) their compatibility with other coatings and surfaces, and (d) their desired performance.

DEVELOPED IN CONJUNCTION WITH THE MERIT SHOP FOUNDATION
AND THE OHIO STATE UNIVERSITY RESEARCH FOUNDATION, OHIO STATE UNIVERSITY.

THE NATURE OF PAINTS/COATINGS

All paints are composed of pigment and vehicle. The pigment is the solid, particle portion of the paint that is responsible for the coloring and hiding power of the paint. The vehicle is the liquid portion of the paint that carries the pigment to the surface and forms the film. The vehicle is composed of binders and solvents. In some technical literature, paints are considered to be composed of three parts: (1) solvent, (2) binder, and (3) pigment. The binder remains as part of the dry film and the solvent evaporates away. As the binder component increases, the gloss of the finish increases. As the solvent and pigment decrease, the gloss of the paint or coating increases. See Fig. 1.

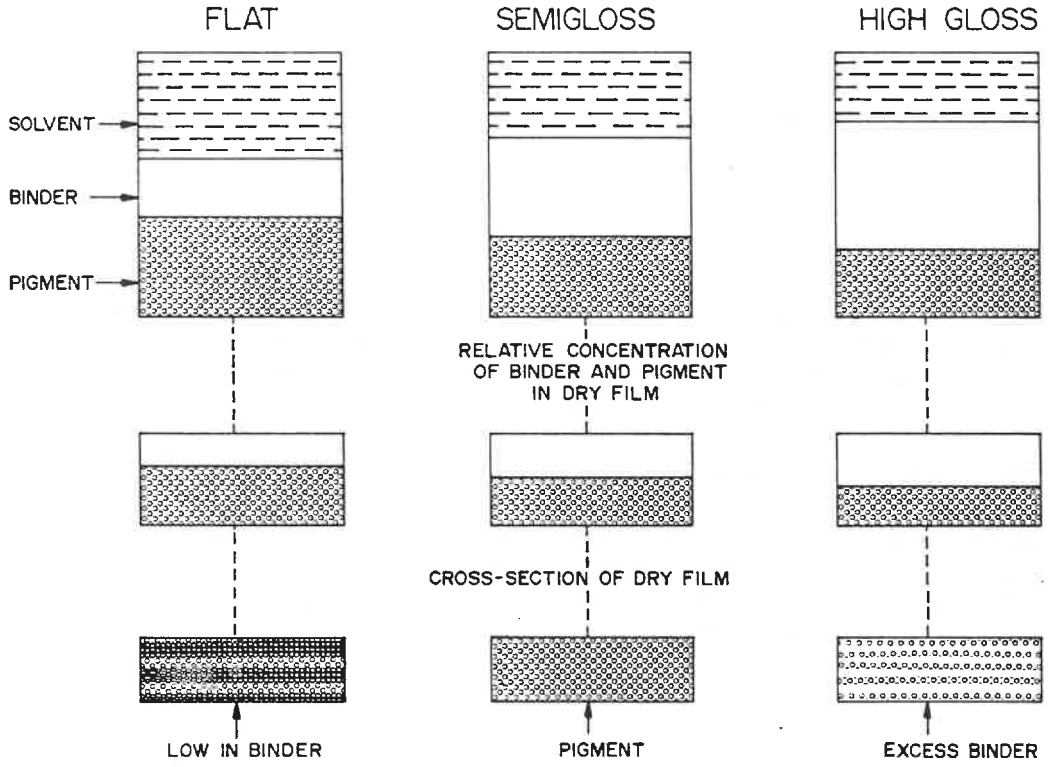


Fig. 1. Effect of binder and pigment on gloss (vehicle = solvent plus binder).

The binder is responsible for most of the properties of the paint. By varying these binders, many different types of paints can be produced.

Obviously, no one paint can serve all the needs. Therefore, it is important for the painer to know which types of paints are suitable for which jobs.

Water-based paints/coatings use water as the evaporative portion of the vehicle. These coatings are generally low odor, fast drying, and easily applied.

Coatings differ from paints mainly in that they do not necessarily have a pigment. Some coatings also are much thicker and do not always harden completely. A paint can always be considered a coating, but a coating is not always a paint.

BASIC TYPES OF WATER-BASED PAINTS/COATINGS

There are many varieties of water-based paints/coatings. Hence not all varieties will be discussed here. However, these varieties use some combination of the following materials as binders: latex, vinyl, acrylic, epoxy, alkyd, and urethane (see Fig. 2). For example, one of the more common combinations is an acrylic latex.

Latex

Latex is a rubber used for many years as a binder for water-based emuslion paints. Latex is typically inexpensive, easy to apply, and washable. Latex, by itself as a binder, usually adheres poorly and ultimately becomes brittle. By combining vinyls and acrylics with latex, more desirable paints have been produced.

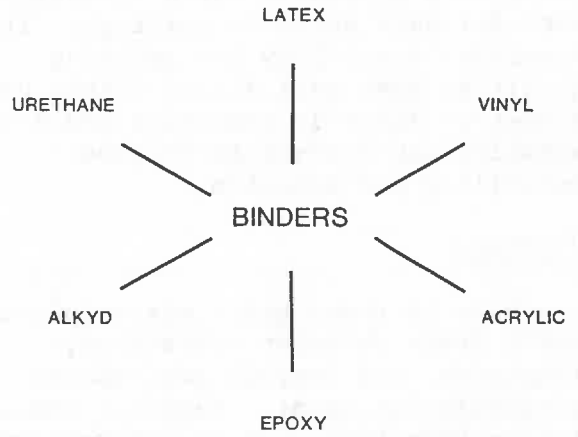


Fig. 2. A typical acrylic latex blend.

Vinyl

Vinyl is a soft plastic used in many water-based emulsion paints. Vinyl imparts elasticity and sheen to the paint. Vinyl is usually used in combination with latex and acrylic.

Acrylic

Acrylic is a plastic which adds luster and hardness to a paint. It is a durable binder and generally is used in combination with latex, vinyl, and epoxy. Elasticity is also a strong point of acrylic.

Epoxy

Epoxy is an extremely hard plastic used where great durability and long life are desirable. It is usually formed by mixing two agents together. Recently epoxies have been used in water emulsion-based coatings. They also have great chemical resistance and color retention.

Alkyd

Alkyd is a synthetic resin (plastic) used for many years in coatings. Its excellent durability and adhering qualities have made alkyds widely used binders. Alkyd is sometimes added to acrylics and latexes to improve durability and adhesion.

Urethane

Urethane is a synthetic resin (plastic) which lends abrasion resistance, toughness, and overall performance properties to paint. Recently these resins have been used in water-based paints.

WATER-BASED PRIMERS

A primer must provide a solid foundation for the topcoat, prevent absorption of the topcoat into the surface, and provide good "tooth" (adhesion) for the topcoat. Most primers today act to provide some or all of these functions.

Water-based primers, until recently, have had limited use. Because of their tendency to rust some metals and raise wood grain, water-based primers were used mostly on cementitious surfaces (masonry/concrete and plaster/drywall). Now, this is not necessarily the case. New products have been created which inhibit rust and limit the raising of grain.

Some coatings are used as primers only. Other coatings used primarily as topcoats are sometimes used as primers. Also, some coatings are designed to be used as both primer and topcoat. Painters should consult the technical information on the can's label to determine proper use of the coating.

This section will deal with different substrates (wood, metal, cementitious, and synthetic materials) and the primers to be used for each. See Fig. 3.

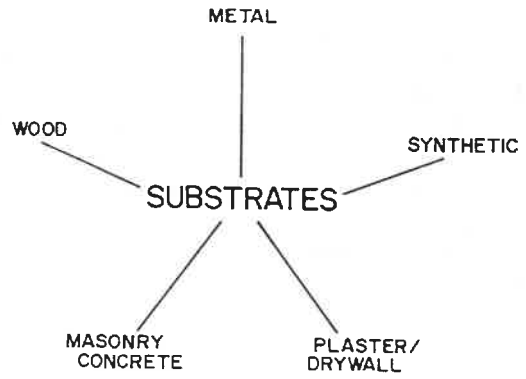


Fig. 3. Substrates may be classified into these principal types.

General characteristics such as sheen, coverage, desired performance, compatibility, and application will be covered.

Wood

Most primers for wood are still oil-based (solvent-based) because of their superior penetration qualities. There are, however, a number of water-based primers for use on wood surfaces. Generally water-based wood primers work best on more porous woods where penetration is greater. Water-based primers are inherently of low odor compared to oil-based primers.

Vinyl Acrylic Primer. These primers are used on new wood for interior use. They are quick drying, form a flat finish, and can be used under emulsion- or oil-based paints. Coverage is from approximately 350 to 450 square feet, depending on the texture and porosity of the surface. This type of primer can be applied with brush, roller, or spray and should be applied when the surface temperature is above 50°F. These primers also can be used as a sealer for coal tar and asphalt impregnated surfaces.

Water-Based Alkyd Enamel Undercoater. This enamel undercoater is a water-based alkyd enamel. This primer is most compatible to enamel topcoats. It provides a hard surface with good "tooth", that is, a receptive surface for subsequent painting.

Coverage ranges from approximately 300 to 400 square feet, depending on the surface. Most often applied with brush, this primer can be rolled or sprayed. Water-based enamel primers most often are used on interior wood surfaces where semigloss or gloss surfaces are desired. Properly applied, with correct topcoat, this primer provides a desirable, washable, and long-life coating.

Alkyd Modified Acrylic Primer. This type primer is used for exterior new wood or repaint application. It may be used under oil- or water-based paints.

This coating offers excellent sealing, flexibility, blister resistance, and quick recoatability. Ease of application is also a strong advantage of this primer.

Application should be done with the surface slightly moist. Also, this primer should not be applied in direct, hot sunlight. Surface temperature should be 50°F minimum. Keep this primer from freezing. Brush, spray, or pad application is acceptable.

When properly applied this primer will provide an excellent, sun-proof base for all water- and oil-based topcoats. It is durable and provides long coating life.

The coverage of this primer is approximately 400 square feet. This, of course, depends on the surface texture and porosity.

Urethane-Latex Primer. Although mostly used as a topcoat, this water-based urethane latex is suggested as a primer for itself. When slightly thinned, this coating provides an extremely tough film for use on wood decks and floors. This coating covers approximately 300 to 400 square feet per gallon and may be applied with brush, spray, or roller. It is suggested that only urethane topcoats be used when this material is used as a primer.

Metal

In the past, water-based primers and ferrous-metal surfaces have been incompatible. This was because rusting of the surface occurred as the coating dried. Even today some water-based primers on the market are not compatible with some metals.

Today, advances in chemistry have produced alkyd modified acrylic emulsion primers that have overall excellent performance on metals.

Because they have inherently low odor, these primers are extremely useful in areas where fumes and odors are prohibited. Hospitals and nursing homes are examples of areas limited to non-toxic coatings.

These primers boast excellent adhesion on metal. They also have excellent corrosion resistance. This is because a corrosion inhibitor has been added to the primer. They are recommended for use over interior or exterior surfaces of new iron, steel, aluminum, and galvanized steel. They may also be used over properly prepared, previously rusted ferrous substrates. They may also be used on previously painted aluminum or galvanized steel.

These materials cover at a rate of approximately 300 to 350 square feet per gallon and are fast drying. They may be applied with brush, roller, or spray.

These primers are particularly compatible with acrylic topcoats, but they may be used under most coatings. They provide a tough smooth surface for topcoating.

Cementitious

This "cementitious" classification includes masonry/concrete and plaster/drywall substrates. Water-based materials have always been superior for use on these surfaces. Water-based primers are low in odor on these materials, also. Three basic types of water-based primers are used almost exclusively on all cementitious surfaces. These are vinyl acrylic block fillers, acrylic epoxy block fillers, and vinyl-acrylic emulsion primers.

Vinyl Acrylic Block Fillers. These fillers are vinyl acrylic emulsion in a thick paste (high viscous) form. They provide excellent adhesion and fill characteristics. They are quick-drying and may be used under most water-based and oil-based topcoats. Their coverage rate is from approximately 50 to 150 square feet per gallon. They must be applied carefully so as to completely fill porous surfaces.

If surfaces are very hot and dry, it is suggested that the surface be premoistened. Application is not recommended in the hot sun.

Block fillers may be applied by roller, brush, or spray. Materials must be thoroughly worked into voids.

Acrylic-Epoxy Block Fillers. This block filler is a two-part system offering great durability and long life. It is meant to be used with epoxy-type topcoats, but it can be used with some other topcoats. This blockfiller is used where high moisture or heat are prevalent. It also serves well where extensive steam cleaning is expected.

This product may be applied by brush, roller, or spray. It will cover approximately 100 to 200 square feet per gallon depending on the surface porosity.

Vinyl-Acrylic Emulsion. This type of sealer is of the same basic composition as block filler, but in less viscous form. This sealer is highly recommended as a primer for plaster, sheetrock, wallboard, brick, cement, masonry, and concrete.

Coverage ranges from approximately 350 to 450 square feet per gallon and may be applied by brush, roller, or spray. Surface temperature should be a minimum of 50°F for application. Vinyl-acrylic emulsion primers are compatible with most water-based and oil-based coatings.

Coatings are constantly under development and new, improved ones appear on the market regularly due to constant advances in paint chemistry. This section has covered basic, general primer types. It is always good practice, when in doubt, to contact the manufacturer regarding a particular product or need.

Synthetics

Synthetic substrates include "man-made" materials such as plastics, particleboard, and fiberglass. These materials have smooth, non-porous surfaces that are strong and easily maintained. Synthetics are also weather resistant, impact resistant,

and corrosion resistant. For these reasons, the use of synthetics in the construction industry is increasing. However, there are great problems in coating these surfaces. Because synthetics are both smooth and non-porous, water-based primers will not adhere to their surfaces. The water-based primer can not create the type of bond necessary for good adhesion. The primer would easily peel free from the surface. For information on primers for synthetic substrates, refer to Task Module 07212, Oil-Based Paints/Coatings.

WATER-BASED TOPCOATS

Water-based topcoats have become, in recent years, desirable alternatives to oil-based (solvent-based) coatings. Ease of application, durability, color retention, low toxicity, low odor, elasticity, low cost, and many other attributes help to make water-based topcoats widely used. Also, water-based topcoats enable the contractor to increase production by eliminating long curing periods between successive coats.

There are so many individual varieties of water-based topcoats that it is difficult to discuss each one. However, they can be generally categorized. The binders used for water-based topcoats are: latex, vinyl, acrylic, alkyd, epoxy, and urethane. Refer to Fig. 2 once more. These materials generally are used in some combination. Each manufacturer has its own special mixtures to produce products with unique properties.

Because a general description of these materials was provided in the section on primers, none is necessary here. These materials are utilized in much the same manner in the production of topcoats.

Topcoats relate, by compatibility, to their undercoats. Therefore, they will be discussed by type and compatibility and not categorized by substrate.

Many of these topcoats can also be used on properly primed synthetic surfaces. However, the paint or coating manufacturer should be consulted to determine compatibility.

In general, water-based topcoats should be applied over compatible primers or, when repainting, over water-based topcoats. It is not a recommended practice to apply a water-based topcoat over an oil-based topcoat without sanding the surface or placing a primer in between.

These types of topcoats are discussed: alkyd-modified-vinyl-acrylic, vinyl acrylic emulsion, water-based alkyd resin, acrylic latex, vinyl acrylic resin, acrylic epoxy, polyvinyl-acetate latex, and urethane latex. For each of these types, a description of coverage, compatibility, application, desired performance, and finish will be included.

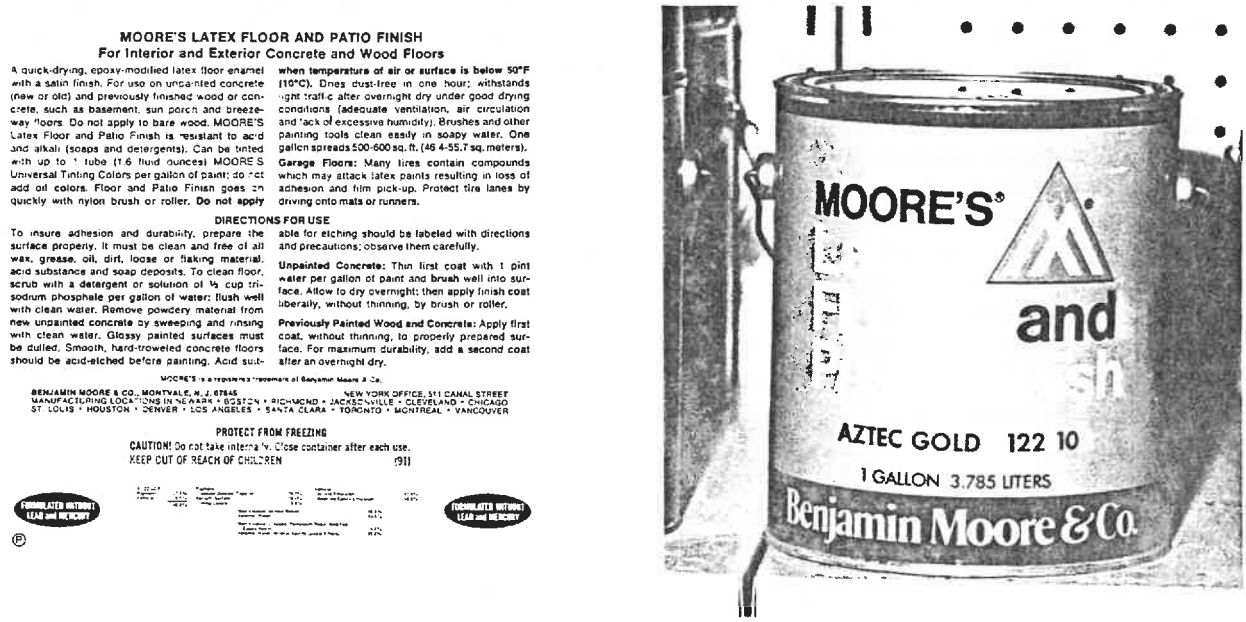
Alkyd-Modified-Vinyl-Acrylic

This coating is suitable for interior and exterior concrete floor and wall use. It may also be used on previously painted wood floors. See Fig. 4 for an example.

This coating provides a durable, fast-drying, low-sheen finish, and has low odor. It is resistant to alkali and moisture and washes well.

The coverage of this coating is good. It ranges from approximately 350-400 square feet per gallon depending on the porosity of the surface.

Application should be to cool surfaces. This can be accomplished by misting or dampening the wall or floor with a hose. Brush is recommended for the first coat. This helps work the material into the surface voids. Rollers also may be used.



MOORE'S LATEX FLOOR AND PATIO FINISH
For Interior and Exterior Concrete and Wood Floors

A quick-drying, epoxy-modified latex floor enamel with a satin finish. For use on uncolored concrete (new or old) and previously finished wood or concrete, such as basement, sun porch and breezeway floors. Do not apply to bare wood. MOORE'S Latex Floor and Patio Finish is resistant to acid and alkali (soaps and detergents). Can be tinted with up to 1 tube (1.6 fluid ounces) MOORE'S Universal Tinting Colors per gallon of paint; do not add oil colors. Floor and Patio Finish goes on quickly with nylon brush or roller. **Do not apply when temperature of air or surface is below 50°F (10°C).** Dries dust-free in one hour; withstands light traffic after overnight dry under good drying conditions (adequate ventilation, air circulation and lack of excessive humidity). Brushes and other painting tools clean easily in soapy water. One gallon spreads 500-600 sq. ft. (46.4-55.7 sq. meters).

Garage Floors: Many tires contain compounds which may attack latex paints resulting in loss of adhesion and film pick-up. Protect tire lanes by driving onto mats or runners.

DIRECTIONS FOR USE

To insure adhesion and durability, prepare the surface properly. It must be clean and free of all wax, grease, oil, dirt, loose or flaking material, acid substance and soap deposits. To clean floor, scrub with a detergent or solution of ½ cup trisodium phosphate per gallon of water; flush well with clean water. Remove powdery material from new unpainted concrete by sweeping and rinsing with clean water. Glossy painted surfaces must be dulled. Smooth, hard-troweled concrete floors should be acid-etched before painting. Acid suitable for etching should be labeled with directions and precautions; observe them carefully.

Unpainted Concrete: Thin first coat with 1 pint water per gallon of paint and brush well into surface. Allow to dry overnight; then apply finish coat liberally, without thinning, by brush or roller.

Previously Painted Wood and Concrete: Apply first coat, without thinning, to properly prepared surface. For maximum durability, add a second coat after an overnight dry.

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PROTECT FROM FREEZING

CAUTION! Do not take internally. Close container after each use.
KEEP OUT OF REACH OF CHILDREN (911)

FORMULATED WITHOUT LEAD and MERCURY

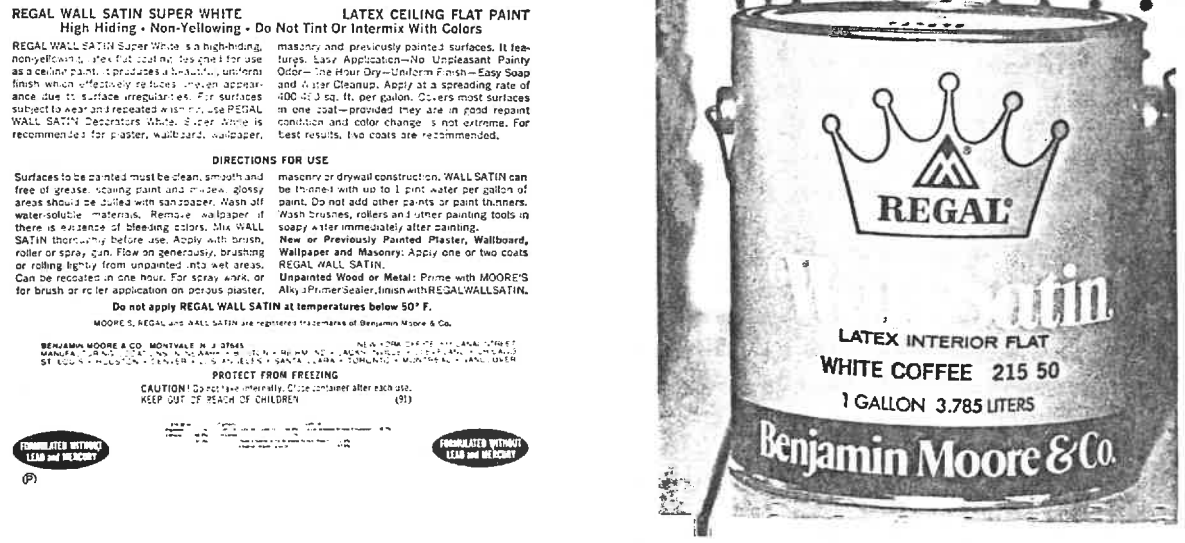
℗

Fig. 4. This topcoat has an alkyd-modified-vinyl-acrylic binder.

Properly applied, alkyd-modified-vinyl-acrylic coatings are very durable. It is suggested that they be used with total alkyd-modified systems. However, if the surface is properly prepared between coatings, then they can be covered with other overcoats.

Vinyl Acrylic Emulsion

This type coating provides a range of finishes from flat to glossy and is used for all surfaces when properly primed. The combination of vinyl and acrylic produce durability, color retention, washability, ease of application, elasticity, and good hiding power. See Fig. 5 for an example of this topcoat.



REGAL WALL SATIN SUPER WHITE — LATEX CEILING FLAT PAINT
High Hiding • Non-Yellowing • Do Not Tint Or Intermix With Colors

REGAL WALL SATIN Super White is a high-hiding, non-yellowing, flat coating designed for use as a ceiling paint. It produces a beautiful, uniform finish which effectively reduces unsightly appearance due to surface irregularities. For surfaces subject to wear and repeated washing, use REGAL WALL SATIN Decorators White. Super White is recommended for plaster, wallboard, wallpaper, masonry and previously painted surfaces. It features: Easy Application—No Unpleasant Paint Odor—One Hour Dry—Uniform Finish—Easy Soap and Water Cleanup. Apply at a spreading rate of 400-450 sq. ft. per gallon. Covers most surfaces in one coat—provided they are in good repaint condition and color change is not extreme. For best results, two coats are recommended.

DIRECTIONS FOR USE

Surfaces to be painted must be clean, smooth and free of grease, loose paint and chalk. Glossy areas should be dulled with sandpaper. Wash off water-soluble materials. Remove wallpaper if there is evidence of bleeding colors. Mix WALL SATIN thoroughly before use. Apply with brush, roller or spray gun. Flow on generously, brushing or rolling lightly from unpainted into wet areas. Can be recoated in one hour. For spray work, or for brush or roller application on porous plaster, masonry or drywall construction, WALL SATIN can be thinned with up to 1 pint water per gallon of paint. Do not add other paints or paint thinners. Wash brushes, rollers and other painting tools in soapy water immediately after painting.

New or Previously Painted Plaster, Wallboard, Wallpaper and Masonry: Apply one or two coats REGAL WALL SATIN.

Unpainted Wood or Metal: Prime with MOORE'S Alkyd Primer Sealer, finish with REGAL WALL SATIN.

Do not apply REGAL WALL SATIN at temperatures below 50° F.

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PROTECT FROM FREEZING

CAUTION! Do not take internally. Close container after each use.
KEEP OUT OF REACH OF CHILDREN (911)

FORMULATED WITHOUT LEAD and MERCURY

℗

Fig. 5. This paint has a vinyl acrylic emulsion binder.

Coverage rates vary from approximately 50 to 500 square feet per gallon depending on the particular type paint or coating. Some coatings of this type are "high-build" coatings. They contain high volume solids which allow, in some cases, one coat coverage. Others are lower in these solids which allows for greater square feet coverage. These coatings can be used for most surfaces but are particularly good for masonry substrates and drywall.

They may be applied with brush, roller, or spray. The surface must be clean and free from alkali buildup. Most of these coatings must be applied to surfaces with a minimum surface temperature of 50°F.

Water-Based Alkyd Resin

These coatings are water-based enamels ranging from flat to high gloss. They may be used on all primed surfaces except floors. They are low odor making them particularly useful for hospitals, nursing homes, and schools. They exhibit good color retention, hiding qualities, and good mar and stain resistance. They provide "high build" with excellent flow characteristics.

Application must be on surfaces with a minimum temperature of 50°F. They can not be used as an immersion coating. Apply by brush, roller, or spray. See Fig. 6 for an example of a water-based alkyd resin.

Coverage is approximately 450 square feet per gallon. This, of course, depends on the condition of the surface. These coatings are generally compatible with all coatings.

Acrylic Latex

Depending on the percentages of these two materials, acrylic latex paints span a wide range of qualities and elasticity. Acrylic provides durability and fade resistance while

Generic Type: Water base alkyd resin.

Product Analysis:
Architectural White and Pastel Base 53-352 (53-610)

Pigment			28.2%
Titanium Dioxide Class 3	100.0%		
Vehicle			71.8%
Non-Volatile (Alkyd* Resin and Driers)		37.7%	
Volatile		62.3%	
Water	81.4%		
Glycol and Glycol Ethers	15.5%		
Aliphatic Hydrocarbons	3.1%		
	100.0%	100.0%	100.0%

*Modifying Acids — Linoleic, Oleic, Palmitic, Linolenic and Stearic.

Fig. 6. An example of a water-based alkyd resin.

latex provides ease of application, breathability, and good flow characteristics. These paints are used on the interiors, exteriors, and on all properly primed surfaces. Generally they are more compatible to other acrylic latex primers and coatings. However, they can be used to coat almost any properly prepared surface. See Fig. 7 for an example of an acrylic latex.

Coverage of these topcoats ranges from approximately 200 to 500 square feet per gallon. This depends on the surface condition and the particular type of acrylic latex.

Application can be made over damp or dry surfaces. The surface temperature should be at least 50°F. They may be

applied with brush, roller, or spray. These water-based paints should be kept from freezing because they will freeze at a higher temperature than oil-based paints.

Vinyl Acrylic Resin

These paints are used solely for spray application. They produce a dry fog and very little overspray. They may be wiped up with a dry cloth. They have low odor, good hiding power, and are very economical. See Fig. 8 for an example.

These coatings are designed expressly for interior use. They produce finishes from flat to semigloss. They are not very washable and should not be used on floors. Surface temperature must be a minimum of 50°F.

TECHNICAL DATA

Product Number—Y-3900

Generic Type—Latex

Color—White

Sheen or Gloss—50-65 at 60°

Percent Solids by Weight—46.3%

Percent Solids by Volume—34.3%

Theoretical Coverage per One Mil Dry (3.0 Mils Wet)—535 sq. ft./gal.

Recommended Coverage (Calculated) 1.4 Mils Dry (4.0 Wet)—400 sq. ft./gal.
When computing working coverage, allow for application losses, surface irregularities, etc.

Percent Vehicle (Solids) by Weight—22.5%

Percent Pigment by Weight—23.8%

Percent Solvent by Weight—53.7%

Viscosity—85-90 KU

Weight per Gallon—10.6 lbs.

Drying Time—
Touch—45 min.-1 hr.
Recoat—16 hrs.

Reduction Solvent—Water

Clean-up Solvent—Water

Type of Cure—Coalescence

Tinting—Will accept DRAMATONE® Colorants at a maximum level of 4 oz./gal. This product is included in the COLOR NATURALS® System.

Fig. 7. One type of acrylic latex paint.

SUPER VELVETON FLAT LATEX FINISH

A super quality interior latex finish that dries to a handsome flat. These Decorator selected colors are odorless and formulated to be the most washable flat possible.
Use Super Velveton on any interior wall surfaces — plaster, drywall, wallpaper, wood, and primed metal.

DIRECTIONS

NEW WORK FIRST COAT
Drywall and Cured Plaster — Super Velveton is an excellent primer (exception is White), or use Quick Primer Sealer.
Wood and Clean Metal — Prime with Interior Trim Primer.
Block Masonry — Where smooth surface is desired, use Block Filler as first coat.

NEW WORK SECOND COAT — Apply Super Velveton.

PREVIOUSLY PAINTED SURFACES
Plaster-Dry Wall-Wood-Masonry — Spot prime patched areas and apply Super Velveton.
Metal — Rusty surfaces should be cleaned and spot primed with Dean & Barry Chromox Primer.

APPLICATION

Surface must be clean. Dull glossy surfaces. Stir thoroughly to mix any pigment on bottom.
Apply — with nylon brush or high quality dynel roller. Can also be sprayed.
Spreading Rate — up to 450 sq. ft. per gallon, depending on surface.
Drying Time — 30 minutes — recoat 2 hours under normal conditions.
Thinning — Comes ready to use, if necessary up to ½ pint of water per gallon.
Clean up — Clean tools with soapy water. Clean up spatter or spills with water promptly.

NOTE: Do not paint where room or wall temperature is below 50°. Store where paint will not freeze.

Fig. 8. This paint has a vinyl acrylic resin binder.

Coverage rate is approximately 200 to 250 square feet per gallon. Drying time is two hours to recoat. They are compatible with most properly prepared surfaces; however, they are used mostly on interior concrete.

Acrylic Epoxy

Acrylic epoxy is a two-part (two-agent) catalytic coating. It is used where extreme hardness, chemical resistance, abrasion resistance, and length of service are desired. Epoxies are compatible to most surfaces when properly prepared. See Fig. 9 for an example.

Pitt-Glaze® II Low Odor High Solids Water Base Acrylic-epoxy Coatings

Generic Type: Water Base Acrylic-epoxy two component finish.

Product Analysis:

Gloss Acrylic Component "A" 16-801

Pigment			10.8%
Titanium Dioxide Class 3	100.0%		
Vehicle			89.2%
Non-Volatile		44.8%	
Acrylic Resin	87.9%		
Polymeric Amine	12.1%		
	100.0%		
Volatile		55.2%	
Water	67.6%		
Glycol Ethers	29.6%		
Alkanol Amine	2.8%		
	100.0%	100.0%	100.0%

Semi-Gloss Acrylic Component "A" 16-901

Pigment			16.2%
Titanium Dioxide Class 3	64.5%		
Silica	35.5%		
	100.0%		
Vehicle			83.8%
Non Volatile		41.2%	
Acrylic Resin	86.4%		
Polymeric Amine	13.6%		
	100.0%		
Volatile		58.8%	
Water	73.1%		
Glycol Ethers	24.1%		
Alkanol Amine	2.8%		
	100.0%	100.0%	100.0%

White and Pastel Epoxy Component "B" 16-802

Pigment			36.3%
Titanium Dioxide Class 3		97.7%	
Silica		2.3%	
		100.0%	
Vehicle			63.7%
Non Volatile (Epoxy Resin)		47.4%	
Volatile (Water)		52.6%	
		100.0%	100.0%

Mid-Range Epoxy Component "B" 16-902

Pitment			33.1%
Titanium Dioxide Class 3		10.8%	
Calcium Carbonate		87.5%	
Silica		1.4%	
		100.0	
Vehicle			66.9%
Non Volatile (Epoxy Resin)		46.0%	
Volatile (Water)		54.0%	
		100.0	100.0%

Fig. 9. Epoxy paints come in two parts.

The low odor of water-based epoxies makes them excellent for use in restricted areas. Hospitals, schools, cafeterias, and food processing plants are examples of good epoxy uses. These products are suggested for interior use.

Coverage ranges from approximately 275 to 325 square feet per gallon depending on the surface condition. Finish ranges from semigloss to high gloss.

Application by brush, roller, or spray is acceptable. A short nap roller and a polyster filament brush are suggested to aid in cleanup and proper application.

Polyvinyl-Acetate Latex

Polyvinyl-acetate latex paints are interior coatings. They produce a flat or semigloss finish, apply easily, have good hiding power, and exhibit excellent resistance to yellowing. See Fig. 10 for one example. They dry fast and cover approximately 400 square feet per gallon. Application is by brush, roller, or spray. Roller, however, is preferred.

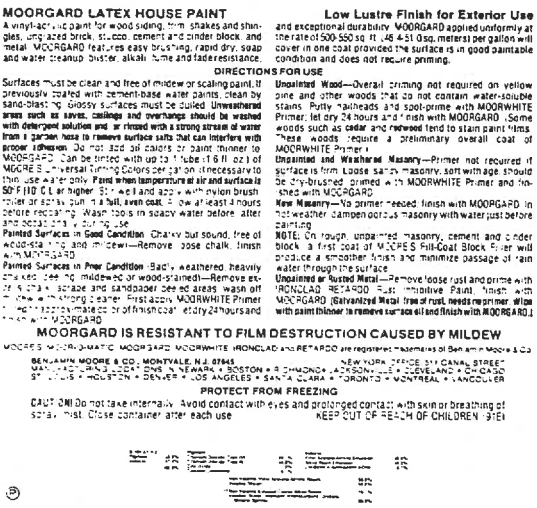
Polyvinyl-acetate latexes have been used for many years. Because of their poor washability, they are being replaced, more and more, by other products.

Urethane Latex

Urethane latex is an alkyd modified plastic emulsion. It is extremely tough and abrasion resistant. See Fig. 11 for an example of urethane latex. This coating is used as a floor and deck enamel and has excellent flow characteristics. It covers approximately 250 to 350 square feet per gallon.

Application is by brush primarily. Urethane latex may, however, be rolled or sprayed. It is mostly used on wood surfaces and may be used as a primer for itself.

Urethane is primarily compatible with other urethane coatings. However, if surfaces are properly prepared, urethane is compatible with most surfaces.



MOORGARD LATEX HOUSE PAINT

Low Lustre Finish for Exterior Use

A vinyl-acrylic paint for wood siding, trim, shakes and shingles, unglazed brick, stucco, cement and cinder block, and metal. MOORGARD features easy brushing, rapid dry, soap and water cleanup, blister, alkali, fume and fade resistance.

DIRECTIONS FOR USE

Surfaces must be clean and free of mildew or scaling paint. If previously coated with cement-base water paints, clean by sand-blasting. Glossy surfaces must be dulled. **Unweathered areas such as eaves, ceilings and overhangs should be washed with detergent solution and rinsed with a strong stream of water from a garden hose to remove surface salts that can interfere with proper adhesion.** Do not add oil colors or paint thinner to MOORGARD. Can be tinted with up to 1 tube (1.6 fl. oz.) of MOORE'S Universal Tinting Colors per gallon if necessary to thin use water only. **Paint when temperature of air and surface is** 50°F (10°C) or higher. Stir well and apply with nylon brush, roller or spray gun in a full, even coat. Allow at least 4 hours before recoating. Wash tools in soapy water before, after and occasionally during use.

Painted Surfaces in Good Condition. Chalky but sound, free of wood-staining, and mildew—Remove loose chalk; finish with MOORGARD.

Painted Surfaces in Poor Condition. Badly weathered, heavily chalked, peeling, mildewed or wood-stained—Remove excess chalk, scrape and sandpaper peeled areas; wash off mildew with strong cleaner. First apply MOORWHITE Primer to peeled areas, mildew or old finish coat; let dry 24 hours and finish with MOORGARD.

Unpainted Wood—Overall priming not required on yellow pine and other woods that do not contain water-soluble stains. Putty nailheads and spot-prime with MOORWHITE Primer; let dry 24 hours and finish with MOORGARD. Some woods such as cedar and redwood tend to stain paint films. These woods require a preliminary overall coat of MOORWHITE Primer.

Unpainted and Weathered Masonry—Primer not required if surface is firm. Loose sandy masonry, soft with age, should be dry-brushed, primed with MOORWHITE Primer and finished with MOORGARD.

New Masonry—No primer needed; finish with MOORGARD. In hot weather dampen porous masonry with water just before painting.

NOTE: On rough, unpainted masonry, cement and cinder block, a first coat of MOORE'S Fill-Coat Block Filler will produce a smoother finish and minimize passage of rain water through the surface.

Unpainted or Rusted Metal—Remove loose rust and prime with IRONCLAD RETARDO Rust Inhibitive Paint. Finish with MOORGARD. **(Galvanized Metal free of rust, needs no primer; wipe with paint thinner to remove surface oil and finish with MOORGARD.)**

MOORGARD IS RESISTANT TO FILM DESTRUCTION CAUSED BY MILDEW

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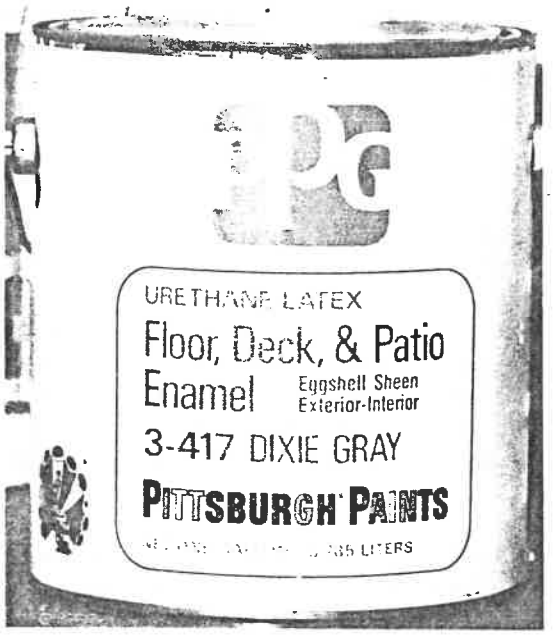
BENJAMIN MOORE & CO., MONTVALE, N.J. 07645

MANUFACTURING LOCATIONS: NEWARK • BOSTON • RICHMOND • JACKSONVILLE • CLEVELAND • CHICAGO ST. LOUIS • HOUSTON • DENVER • LOS ANGELES • SANTA CLARA • TORONTO • MONTREAL • VANCOUVER

PROTECT FROM FREEZING

CAUTION! Do not take internally. Avoid contact with eyes and prolonged contact with skin or breathing of spray mist. Close container after each use. KEEP OUT OF REACH OF CHILDREN.

Fig. 10. A polyvinyl-acetate latex paint.



Pittsburgh
Urethane-Latex
Floor, Deck and Patio Enamel

Generic Type: Urethane alkyd-modified vinyl acrylic latex.

Product Analysis:
White and Pastel Tinting Base 3-410

Pigment			27.0%
Titanium Dioxide Class 3	91.9%		
Calcium Carbonate	4.4%		
Silica & Silicates	3.7%		
	100.0%		
Vehicle			73.0%
Non-Volatile		34.9%	
Vinyl Acrylic Resin	60.0%		
Urethane Alkyd Resins & Driers	20.0%		
Acrylic Resin	20.0%		
	100.0%		
Volatile		65.1%	
Water	95.2%		
Glycol	4.8%		
	100.0%	100.0%	100.0%

Fig. 11. This topcoat has a urethane latex binder.

SUMMARY

Environmental standards are requiring the use of fewer and better oil-based (or solvent-based) coatings. Government agencies, public schools, and medical facilities already have very strict standards for the use of oil-based materials.

The future for water-based paints/coatings is bright. Every day, chemical advances make water-based coatings more and more suitable for more and more uses. It is conceivable that, in the future, water-based coatings will be used almost exclusively.

For a summary of water-based primers and topcoats, study Table 1. This table provides a quick overview of the several materials and their characteristics. The vertical columns are meant to suggest common practice. Such a table can not include all exceptions to general practice.

Courtesies
Task Module 07211

Fig. 4. Courtesy of Benjamin Moore & Co.

Fig. 5. Courtesy of Benjamin Moore & Co.

Fig. 6. Courtesy of PPG Industries, Inc.

Fig. 7. Courtesy of Glidden Coatings and Resins

Fig. 8. Courtesy of The Dean & Barry Co.

Fig. 9. Courtesy of PPG Industries, Inc.

Fig. 10. Courtesy of Benjamin Moore & Co.

Fig. 11. Courtesy of PPG Industries, Inc.

Table 1

Water-Based Paints/Coatings

TOPCOAT	INT	EXT	UNDERCOAT	SURFACE (Suggested)	COVERAGE (Approx. Sq. Feet)	METHOD OF APPLICATION	TYPE OF FINISH (Sheen)
Alkyd-Modified Vinyl-Acrylic	X	X	*	Cementitious	350 - 400	Brush, Roller, Spray, Flat Pad Applicator	Low-High Gloss
Vinyl Acrylic Emulsion	X	X	*	Plaster, Drywall, Masonry, Asbestos, Galvanized	"	"	Flat-Semigloss
Water-Based Alkyd Resin	X	X	*	Wood	"	"	Flat-High Gloss
Acrylic Latex	X	X	*	Same as Vinyl Acrylic More Metal use	"	"	Flat-Semigloss
Vinyl Acrylic Resin	X	X	*	Ceilings (Metal Deck)	200 - 250	"	Flat-Semigloss
Acrylic Epoxy	X		*	Drywall, Metal Wood, Concrete	350 - 400	"	Semigloss and High gloss only
Polyvinyl - Acetate Latex	X		*	Cementitious	"	"	Flat
Urethane Latex	X	X	*	Concrete, Wood, Metal	"	"	Semigloss High gloss

* Choice of undercoat varies widely depending on surface, condition, and previous coating