



# SUPPORTS AND GROUNDS FOR OIL AND TEMPERA PAINTING

By Ralph Mayer

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Annotation and foreword by Matthew Kinsey,  
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## Foreword

This booklet was included as part of the 1960 edition of the Utrecht Linens catalog. From the beginning Utrecht Art Supplies led the industry in promoting studio craft through tutorials, materials data and articles that made the company a valued resource for artists and educators. The author, Ralph Mayer encouraged painters to take a more involved role in the permanence of their work through articles like this, his book “The Artist's Handbook of Materials and Techniques”, a column in American Artist Magazine as well as numerous other research and consulting projects.

At the time this article was written, there was still active debate over the suitability of acrylic primings and supports other than linen. Mayer's characterizations of titanium and zinc white as new and untested and cotton duck as “imitation” canvas may seem surprising considering the ubiquity of these materials in the contemporary studio, but such assertions serve to illustrate the progress of conservation science and the art materials industry. In the period following World War II artists adapted industrial paints and utility cloth for painting, some of which were not of the best quality. Art supply manufacturers were beginning to offer high quality cotton duck and acrylic paints and primers to satisfy the need for alternatives to traditional supports and grounds. As a result, today's artists enjoy convenient, affordable and durable art materials that are ready to use straight from the package.

While current recommendations for contemporary painting supports may differ slightly from the methods described in “Supports and Grounds”, contemporary artists will find that modern materials perform extremely well when adapted to Mayer's instructions. For the traditional painter these tutorials remain authoritative and reliable just as in 1960.

Matthew Kinsey  
Utrecht Art Supplies  
“Ask the Experts” Team

## **Introduction**

The artist must be completely familiar with the nature and technical details of the surfaces on which he paints. A painting is a physical structure, and it is as important for the canvas or panel to be durable and permanent, as it is for the framework of a building, and it is as important that it survive without changing. Certainly, a picture will be no more durable than the material on which it is painted.

The texture, degree of absorbency, and other qualities of the painting surface, have the strongest sort of influence on the final painting, both as to its effect upon the technique, or the manner in which the paint can be applied, and especially, its effect upon the final appearance or visual quality of the finished painting. Good results in these matters, as well as permanence, demand the use of a good painting ground.

In the first place, the materials from which it is made must be chosen from a highly selective list, both as to support materials, and the priming ingredients. Most of these materials have survived the test of long centuries of use, and because of this, specialists and technicians put their faith in them, rather than to rely on more recent untried materials, about which less is known<sup>1</sup>. But there are some exceptions, a few modern materials of unquestioned quality are also used; they will be mentioned in this article.

We call the canvases and panels on which we paint grounds. Strictly speaking, the ground is the priming, and the cloth, wood or board which carries this is the support.

Artists long ago learned that textiles, originally used by artists only for such purposes as banners for processions, decorations for tournaments or jousts, etc. were suitable for permanent easel painting in oil. Canvas could be used because the dried layers of oil paint are more permanently flexible than any other kind of paint. Artists should realize that canvas is exclusively a part of the oil painting technique, and is a contributory reason for its popularity over the years, among its advantages over panels are its lightness and easy portability. It is not recommended for casein and tempera painting.

## **THE SUPERIORITY OF THE PROPER ARTISTS' LINEN SUPPORT**

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1 Over five decades after this was written, much more is known about the long-term performance of synthetic vehicles, sizings and grounds. Conservation specialists and paint chemists have come to consider acrylics and alkyds highly durable and suitable for permanent art, in many cases superior to traditional materials.

From long experience, the standard and best-liked material for an oil painting support is pure linen woven especially for artists' purposes. And with the development of ever-improving methods for longevity and durability over the years, we now have modern linens that are stronger, more sturdy or stout, and of sufficient weight to survive rough treatment and to resist destructive effects. No other textile fabric meets the requirements of a painting ground so well as linen. Jute or burlap, for example, once admired for its bold square weave, was found to embrittle so thoroughly on short aging, that it is seldom used nowadays. Cotton canvas is inferior to artists' grade linen in every single requirement. Its weave seldom has the desired character, while all linens, even the finely woven types, have a bold characteristic weave, the effects of which persist through several paint coatings. Linen stretches better than cotton, and resists atmospheric changes better. Cotton and linen mixtures are particularly bad in this respect since each react differently, thus producing unequal tensions in the ground, which can lead to cracking, or to permanent distortion of the smooth, level effect<sup>2</sup>. Linen is far superior in this manner in which the ground becomes permanently attached to it. Cotton is really an imitation canvas<sup>3</sup>.

Inferior canvases are used in art schools and for elementary classwork, but the modern tendency for instructors is to accustom the student to good professional materials at an early point in his studies.

## **THE PRINCIPLES OF PERMANENT PAINTING AND THE GROUND**

The physical nature of the ground must follow the basic principles of permanent painting and these will determine the choice of materials to be used. These principles are of the utmost importance if the artists' work is to survive.

The underlayer of paint should always, without exception, be less flexible and more rigid than the upper layers, at least they should never be more flexible (coats of equal flexibility, in some instances, are considered good). The purpose of this principle is to prevent cracking and thus promote permanent adhesion between paint layers.

The Germans have a convenient expression for this rule, coatings rich in oil content are called "fat", and those with a relatively higher pigment content, and also those with little oil like white lead (or no oil like gesso) are called "lean". The very first coat of a painting, which is the priming on the linen, should certainly be leaner than the succeeding coats of oil colors. In general lean coatings are absorbent, and a small amount of absorption of the fat layer into the lean layer always creates a better chance for permanent fusion of the paint layers. The rule of "fat over lean" is important and if it is not observed, such defects as peeling, and flaking of the paint layers, may occur<sup>1</sup>. There are three other factors in the permanent adhesion of artists oil paints, and two of them are dependent on properties of the ground itself.

### **1. Porosity**

- 2 Not every weave is equally good as a painting support. Combination weave canvas must be carefully selected to ensure dimensional stability during sizing, priming and painting.
- 3 Linen has longer, stronger fibers than cotton, but long-term both cotton duck and linen canvas perform similarly well as they age. In the first half of the 20<sup>th</sup> c. artists found it was difficult to find cotton canvas suitable for permanent painting. Utrecht Linens was among the first to offer high-quality cotton duck specially selected for artists' use. Today cotton duck is the most popular fabric painting support.

The painting surface should have a degree of absorbency or porosity, so that the paint layer which is to be put upon it, can grip the surface and achieve a more thorough anchorage to it<sup>4</sup>. The white lead priming of a canvas would be called non-absorbent (as compared with gesso<sup>5</sup>) but within this general description it has a certain degree of absorbency, needed for oil painting, which is of absolute importance.

## **2. Smooth Texture or “Tooth”**

The painting surface should have a certain degree of coarseness or roughness in the interstices of which the drying paint can also get a grip or foothold. Both of these points—porosity and texture—contribute to the good brushability and manipulative control of the paint, by creating the proper drag or resistance to the brush, it also promotes the good structural stability of the picture.

“Tooth” is a word that describes a microscopic roughness or “sandpaperishness” on an otherwise smooth level surface. In impasto painting, it is important that the canvas should be of a coarse texture so as to provide the mechanical grip to hold, heavier applied paint layers. The heavier the impasto the coarser must be the texture (or weave of canvas) so that the ground provides a permanent foundation.

In very heavy painting, the fat over lean principle alone does not seem to be sufficient. Mechanical grip of a textured ground is required as an additional factor to assist adhesion of the paint layers to the ground. Thinner paint layers can be applied on any good surface because they present no weight problem, and the picture with little impasto can be done on a smooth canvas. It is possible that one can get adequate adhesion with either number one or number two alone, but the number of failures due to non-absorption or too slick smoothness, makes it wiser to have both.

An additional factor in the creation of permanent adhesion of impasto painting, is consideration of the weight of the linen canvas (weight of linen per square yard). The greater the quantity of paint applied, the heavier the load the linen has to carry. It then becomes necessary for the artist whose style calls for heavy impasto to choose a canvas of heavy weight in order to provide a reliable support for the excess weight of the paint

## **3. Adhesive Power of the Paint**

The third of these important factors in permanent adherence is the natural adhesiveness of paint, a subject that should be taken up under the study of painting, rather than under grounds. Fresh paint as it comes out of the tubes, is at its peak of natural gluiness. It is never advisable to use paint that has remained too long on the palette.

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4 This aspect of painting grounds is still considered important. Utrecht Acrylic Gesso is formulated to offer the optimal degree of absorbency that produces good adhesion and a lean first paint layer.

5 In this context “gesso” refers to a mixture of chalk, white pigment and protein glue, not to the acrylic dispersion painting ground commonly known by the same name.

The canvas texture and paint quality can play an important part in the enrichment of the surface of a painting. The artist must choose the texture of the canvas which is most suited for his aims. In thinly applied paint layers the canvas texture is more apparent. This can also be utilized in a painting done in impasto where the artist paints certain areas thinly so as to reveal the canvas texture. The texture of the canvas has an influence on the paint quality of the physical appearance of paintings. To learn this, one has only to view the pictures in the average group exhibition where those of poor quality suffer by comparison. The artist can sometimes even integrate the physical

characteristics of the canvas texture as a means towards his artistic expression.

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**Editors' Note:**

The following section, originally titled "THE UNSUITABILITY OF TITANIUM AND ZINC FOR OIL GROUNDS" is presented here in order to preserve the complete text. While it is true that lead grounds perform extremely well over time, it should be noted that titanium/zinc blends are not susceptible to the same sort of discoloration as lead. Most importantly, titanium and zinc whites are also free of the health risks associated with lead paint. In the decades since this was published, paint chemists and art supply manufacturers have developed alternatives to lead white grounds based on titanium and zinc that can provide a durable, lean foundation for oil painting.

"Titanium and zinc whites are brilliant snowy whites. Titanium white didn't get into artists' hands until 1920. Zinc white wasn't used by artists until late in the 19th century. They are both higher in oil content than white lead. Zinc, and to a lesser extent titanium, dry to form paint films of a more tender, less durable and more brittle nature than does white lead. Therefore they are not so suitable structurally as oil priming materials as white lead. Zinc and titanium whites when stored in the dark tend to retain their whiteness and to turn yellow less than white lead, which has a tendency to acquire a yellowing tint when stored in the dark for a length of time. Its whiteness can be restored by putting the canvas in a well lighted room for several days. White lead remains unchanged in color when overpainted. If anyone doubts the permanency of flake white as an artists' color, a glance at the lace collars of Franz Hals or of William Hogarth will be reassured. Because of the superior qualities of white lead, namely its quick drying time, fine film-forming properties, and low oil content, there is no real substitute for it as an oil priming material. In watercolor, casein or any paint other than oil the situation is reversed; white lead is never recommended, while zinc and titanium are faultless.

One of the points to watch out for among the prepared canvas in the shops is the insufficient body or weight or stoutness of the linen on which some of them are made. Good tight weaves are more available now than in the recent past; formerly, even some of the expensive kinds were made on rather flimsy, open-weave materials. In purchasing ready made canvas, make sure the cloth is pure artists' linen, with a good tight close weave of proper weight. There are a few reliable tests that the artist can make to assure himself of the quality of the ready made priming. Bending and twisting a corner will reveal the worst cases of bad anchorage, and also the rubbery, overflexible type that must be rejected."

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**THE IDEAL PROPERTIES OF THE WHITE LEAD OIL GROUND**

White lead is considered to be the best priming material available because it has the lowest oil content of all pigments and therefore it is the leanest. It is a finely divided smooth compound, composed of basic carbonate of lead. Since classical times white lead has been used in paintings. It is one of the most thoroughly time-tested pigments. It possesses the finest physical properties of any pigment, and when it dries a tough, durable film results. It is absolutely perfect for oil painting and the old masters who had no other oil white achieved brilliant effects with it. But it is as an oil film strengthener that it is most valuable to the artist. Of all the pigments, black, white or chromatic, not one comes close to it in equaling its toughness, strength and durability. It is a fast drier and sometimes seems to transcend many of the rules and precautions that apply to other pigments.

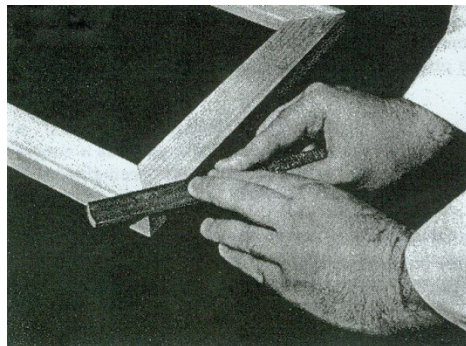
**THE SIMPLE PREPARATION OF THE CANVAS**

Many artists have always preferred to prepare their own canvases by priming linen cloth with a coating of white lead in oil. There are many good reasons for this - to insure the use of good materials; and for economy. Also because the danger of embrittlement of the prepared ground on aging in tight rolls, and subsequent drastic ordeal of stretching which can produce undesirable strains in the already prepared ground. Canvas, individually prepared, on its permanent stretcher is not subject to this hazard, for it never leaves its home base.

## THE EASY STRETCHING OF UNPRIMED LINEN

Unprimed linen canvas stretches without any wrinkles or bumps, far more easily and quickly than prepared canvas. Unprimed linen canvas has a degree of natural elasticity which allows for easy stretching. The prepared canvas has been stiffened by the sizing and the priming which makes it more difficult to stretch. After stretching the unprimed linen, any slight wrinkles that may be present will disappear, because after the sizing has dried the unprimed linen will tighten up more. In canvases larger than 30 " by 30 " the artist should allow a little slack for the slight shrinkage of the linen. The self-prepared canvas will remain well stretched indefinitely, usually without ever having to resort to the use of keys.

There are several equally good ways to stretch unprimed canvas. One widely used system is the following:



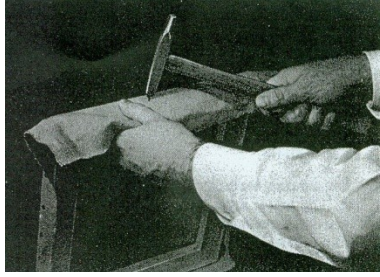
SMOOTHING THE CORNERS OF STRETCHERS

1) Before starting to put the stretcher strips together make sure that the parallel sides are of equal length. After putting the stretcher strips firmly together, check with a carpenter square to see if they are correctly joined<sup>6</sup>. Then examine the front surface of the corners over which the linen will be stretched and will cover to see if the stretcher strips are joined smoothly. If any unevenness exists at the corners,

that is if one stretcher strip is a little higher than the other it should be evened out by sandpapering it or using a fine rasp. If this was not done the unevenly joined strips would cause a wrinkle in the corner of the canvas.

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<sup>6</sup> When a square is not handy, a rough check can be performed by measuring the distance diagonally between corners. If the measurements agree, the corners should be reliably in square.



STRETCHING THE LINEN CANVAS

will go in their frames.

3) If the artist plans a painting larger than 36 " by 36 " it is wise to reinforce the stretchers with a crossbar or crossbars depending on the size, to eliminate twistage. Heavy weight stretchers with crossbars are useful in extremely large sizes.

4) Then cut the linen at least 1 1/2 inches larger than the stretcher size, at every side.

5) After centering the linen on the stretcher, so that the weave is parallel to the side, begin attaching the canvas to the stretchers by placing a 3/8 or 1/2 inch ( depending on the weight of the linen canvas ) carpet tacks in the center of the short side of the stretchers.

6) Then pull the linen tightly toward the corner of the short side and fasten the linen with a tack at the end of the stretcher strip. Repeat this on the opposite corner of the same side. The first side of the linen has now been fastened with 3 tacks.

7) Then begin stretching the linen from the opposite short side. Pull tightly from the center and fasten with a tack. Then pull one corner at a time, in a direction away from the center of the stretcher and away from the opposite side. This will tighten the area between the corner and the whole linen surface and also the other side.<sup>8</sup>

8) At this point, both sides of the short sides have 3 tacks each holding the linen in place. Then start stretching and nailing the tacks every two inches from the center of the short sides.

9) Then repeat the same procedure for the long sides. If the canvas is square or almost square shape it does not matter on which side one starts.<sup>9</sup>

10) Leave the corners untacked until the end, then fold in the linen, and place the tack in the wider part of the stretcher joint, which is either at the top or the bottom of the edge, at alternate ends of the bars. Preferably use a 1/2 inch tack here.

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7 This can be accomplished with staples as well as tacks. 2 or 3 staples across the joint will help prevent distorting the stretcher chassis during stretching.

8 This method is stretching "on the bias", diagonally against the grain of the fabric. This distributes tension evenly across the canvas and prevents scallop-shaped marks along the edges.

9 For heavy-duty or deep profile stretchers, two rows of tacks can be used parallel to one another; the two rows should be offset diagonally against one another. If using staples, they should be positioned diagonally to the stretchers.

2) With the stretcher lying face down, place 1/2 inch tacks at the corners to prevent the tongue-and-groove joints from moving and thus distorting the shape of the canvas while it is being stretched<sup>7</sup>. After the linen is completely stretched, you can remove the tacks if you wish. It should be pried off with a screw driver. It is important for the canvases to be square so that they



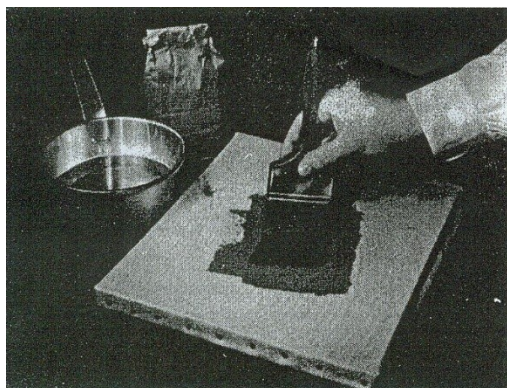
## THE SIMPLE TIME-TESTED METHOD FOR THE PREPARATION OF THE CANVAS

The preparation of artists' canvas is a simple uncomplicated procedure which has come down through five centuries of experience. Artists find it convenient and efficient to prepare a number of canvases at one time. The artist should never apply paint on an unsized linen. The oil from the paint will be absorbed by the linen and embrittling of the support will result. The purpose of the sizing is to isolate and permanently protect the linen from being acted upon by the oil from the paint layers. Rabbitskin glue and gelatine belong to the complex class of organic compounds known as proteins, whose composition contains large molecules. As a result of this structure, it is unaffected by oil, thus making it an excellent protector for linen.

### SIZING PROCEDURE

Rabbitskin glue and gelatine come in a fine granulated form, so that they may be easily and directly dissolved without preliminary soaking<sup>1011</sup>.

6 Level Tablespoons of Ground Glue  
1 Quart of Boiling Water<sup>12</sup>



APPLYING THE LIQUID GLUE SIZE

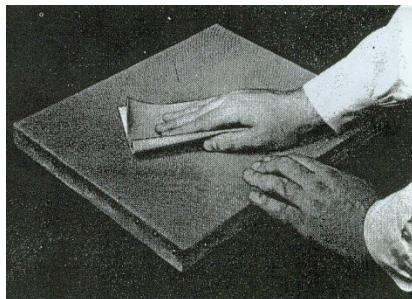
Do not boil the sizing solution because this will decrease the adhesive property of the glue. To prevent this from occurring, after the water has begun to boil, turn off the heat before adding the glue. Add the 6 level tablespoons little by little to the hot water. Keep stirring until each batch of the glue is dissolved. The dry glue can be stored indefinitely and upon aging it slightly increases in adhesive strength.

Gelatine dissolves more readily in hot water than rabbitskin glue. Some artists, because of this factor dissolve rabbitskin glue in the following manner: Heat a quart of water to the boiling point. Pour off half into another container and add into it 6 level tablespoons of the granulated glue, stirring until a smooth solution of a thick consistency is reached. Then stir in the rest of the hot water to obtain the proper consistency.

### APPLICATION OF LIQUID SIZE

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- 10 Rabbit skin glue and gelatin were once more commonly sold in sheets, making measurement more challenging than with granules.
  - 11 Today synthetic alternatives are considered superior to protein sizes like rabbit skin glue, gelatin and casein. Protein glues are hygroscopic (absorb moisture from the air) and can swell or shrink depending on humidity. Acrylic and PVA sizes work well under oil and alkyd primings; acrylic size may be used under acrylic gesso. Rabbit skin glue should not be used under acrylic grounds.
  - 12 This formula produces a relatively strong glue. Mayer's contemporary Frederic Taubes recommended a weaker glue solution. Conservators have since determined that a stronger hide glue solution performs better in terms of retaining dimensional stability and stiffness, which in turn helps preserve paint adhesion.

The surface of the canvas should be brushed in its entirety with liquid glue size with the aid of a sponge or a large housepainters' brush, approximately 2 to 4 inches wide. In order to avoid, missing any areas, it is best to concentrate on one spot at a time. The brush should be worked back and forth, in one direction and then another. Size the edges of the linen to prevent unravelling. Some artists after they apply the size, run their fingers over the entire canvas surface, so as to make sure that no spots remain unsized.<sup>13</sup>



SANDING THE DRIED SIZING

**SMOOTHING THE DRIED SURFACE** After several hours have elapsed, the water will have evaporated and the surface will be dry, however, it may have a little roughness. This condition may be remedied with the aid of a fine grained sandpaper. Sand the surface by rubbing softly over it. When sanding over the rim of the stretchers, your palm should be placed underneath in order to raise the linen up from the stretchers so that the rim will not appear. This may also be done by placing a thin strip of cardboard between the linen and the stretchers so as not to allow the sanding to cause the formation of a rim.

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#### A Word About Safety:

The risks associated with lead-based paints are better understood today than half a century ago. While we encourage artists to try the procedures described in this article, above all, please observe all necessary precautions to protect health and the environment.

The Dutch Boy White lead paste described here is no longer available, but lead-based white oil paints are still manufactured for artists' use. Please refer to the health and safety warnings posted on the package for handling and disposal.

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#### SECOND SIZING

The second application of size should be made in a like manner. Additional sanding is not necessary.

Never use artificial heat to accelerate the drying of the sizing or priming. Let it dry under normal room temperature in a well lighted room.

#### PRIMING PROCEDURE

Materials: The inexpensive brand known as Dutch Boy White Lead Paste that may be obtained in all paint and hardware stores is recommended.<sup>14</sup> It comes in cans varying in sizes from 1 lb. , 5, 12, 25, and 100 pound cans,

( commonly called Cremnitz<sup>15</sup> or flake white ) is composed solely of 90 % basic lead carbonate and 10 % linseed oil. A similar product of other leading firms may be used as well

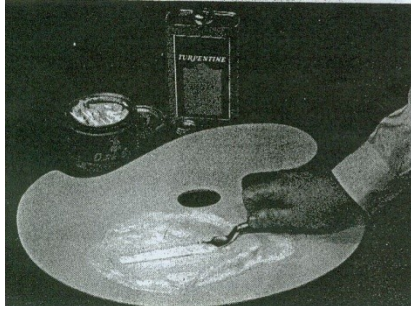
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13 Some artists opt to dampen canvas before sizing to help the sizing sink into the weave, launder fabric before stretching or wet the canvas after stretching and allow it to dry before sizing to improve tension. While Utrecht does not consider these steps necessary, there is some data to suggest that pre-wetting improves retention of a tight stretch.

14 White lead paste was once commonly available for house painting; this product was suitable for artistic painting as well. Lead is no longer permitted for use in architectural paints, but some manufacturers continue to offer lead based primers and tube paints.

15 "Cremnitz" once referred to a specific process for producing lead white pigment from litharge (as opposed to the Dutch process which used metallic lead in the shape of "buckles). The Cremnitz process produced a more crystalline pigment than flake white, which tended to have less regular particles.

## THINNING THE WHITE LEAD



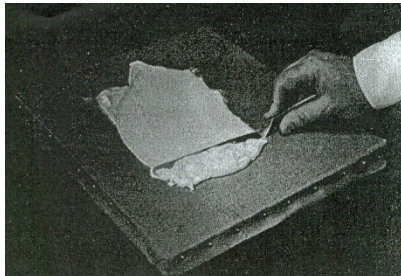
THINNING THE WHITE LEAD

The white lead should be thinned to the point of a semi-liquid consistency, enabling easy application to the canvas. It can be thinned with either gum turpentine or retouching varnish. Gum turpentine is obtained quite easily in any paint or hardware store.

Start by adding small amounts of the thinning agent so as to enable you to mix it with the white lead priming more completely with a stiff palette knife. When mixing is being done, paint may accumulate on the knife. It may be removed with the aid of another palette knife. To test if adequate consistency has

been reached, pick up a large amount of paint on the knife and shake more than gently. Should any paint fall from the knife it may be considered to be ready for use and of proper consistency to work into the grain of the linen easily.

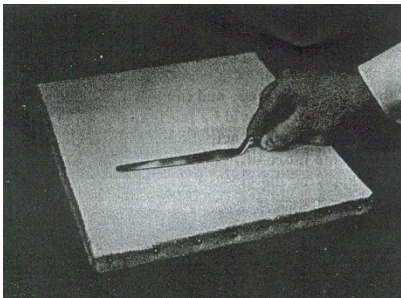
## APPLICATION OF SEMI-LIQUID WHITE LEAD



APPLICATION OF THE WHITE LEAD

The priming is applied usually with a large palette knife. Place a good portion of the priming material in the center of the canvas with the knife. Spread the priming material in one direction and then in the opposite direction. The operation allows you to work into the grain easily and completely. Concentrate on one area at a time so as not to miss any spots.

## PRIMING THE EDGES



SMOOTHING THE WHITE LEAD PRIMING

Firstly, place a small portion of white lead parallel to and an inch away from the edge with a knife and then spread it toward the edge. A strip of thin cardboard may be placed between the canvas stretchers for the avoidance of a rim. This may be done more simply by raising the canvas from underneath with the palm of the hand.

## TO FINISH

The artist may eliminate any unevenness by gliding a clean palette knife over the surface of the canvas. On the very next day, a second priming may be applied. In the period of a week to ten days, or more, the canvas will be entirely dry and ready to use.

## PRIMING WITH A BRUSH

Some artists prime the canvas with a large bristle brush. Apply the priming by stroking the brush in all directions with a wrist wagging motion so as to cover the entire surface. After evenly

distributing the priming over the surface, finish by going over lightly with a clean brush carefully in line with the weave.

### **TONED GROUNDS**

The normal average ground for oil painting is white, and because of its high reflective value it is used especially where the utmost degree of color brilliance is wanted. However, many artists in various schools of painting, past and present, have been willing to sacrifice this quality for some other color property or effect which can only be obtained by the use of a colored ground, usually called a toned ground. Toned grounds are made simply by tinting the white lead priming with any suitable tube color. Naturally, the leanness of the ground is thereby diminished somewhat and so it is best to select those pigments with the highest tinting power, e.g. phthalocyanine blue or green, light red, etc. The quick drying pigments such as the umbers will speed up the drying of the ground<sup>16</sup>.

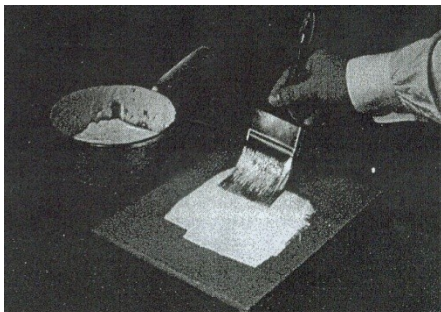
### **IMPRIMATURA**

An imprimatura is a thin veil of transparent layer of color or mixture of colors applied over an already primed white or toned canvas so that the brilliance of the white or toned color is not entirely obscured. Thus the artist can use an under color and still retain the advantage of a reflective white ground. The color should be thinned with retouching varnish<sup>17</sup> to a syrupy consistency. The imprimatura can be applied with a brush, knife or lint-free rag.

### **GESSO PANELS FOR TEMPERA PAINTING**

There is a survival of the earlier kinds of painting developed in Europe before oil painting came in, and despite the greater popularity of textile canvases, have always been selected by some painters for some special consideration or requirement, either of the placement or function of the painting, or because of special painting procedures. Some painters prefer the rigid or solid surface, rather than the resilient or springy canvas usually preferred, and some painters like the level smoothness, rather than the more frequently preferable canvas weave.

### **PREPARATION OF GESSO PANELS**



GESOING THE LINEN COVERED PANEL

Gesso is a smooth absorbent white coating perfected during the Renaissance period for easel paintings and for preparing wood surfaces for easel painting and to receive gilding. The traditional formula has not changed from the recorded classic recipe of Cennino Cennini, except that in various areas and countries, the best available pigment varies. In Cennini's day it was slaked plaster of Paris. In our time it is precipitated chalk. Gesso is simply a solution of rabbitskin glue or gelatine as the binder, with inert white pigments such as whiting, gypsum and chalk with a small addition of titanium white. Wood or

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16 Raw and Burnt Umber contain manganese, a "through drier" which supports oxidation through the entire thickness of the film. In addition, manganese is also a polymerization catalyst which speeds thickening and setting up of fresh paint.

17 Retouch varnish remains permanently soluble in turpentine. More durable results can be achieved using alkyd painting medium instead.

plywood panels are used today less frequently than the special hard wallboard called Presdwood<sup>18</sup>. Gesso has been found to be much too brittle to be used on stretched canvas.

In the application of, gesso, a wide 2 1/2 or 3 inch brush is preferred, and the mixture is applied in several thin coats, to maintain a uniformity throughout. The temperature should be fairly high, by keeping it warm in a double boiler, but not by continuous heating. Air bubbles are the principal defect of careless manipulation. When the solution begins to cool, the brushing will become more difficult, and in time the solution will gell. Lightly sand the smooth side of the Presdwood before applying the gesso.

After applying the first coat, any air bubbles formed are smoothed away with the finger tips. Each subsequent coat is applied as soon as the preceding one is dry enough to avoid being picked up by the brush. The brushing is stopped when the brush begins to drag and the gesso begins its initial set. and each succeeding coat is brushed at right angles to the previous one to prevent the build up of overlapping brush strokes.

After the complete drying of the final coat, (usually four or five coats are brushed on ). a smoothing process is employed to eliminate any brush marks and to smooth any irregularities. Generally the material used is an extremely fine ( 6/0 ) garnet paper. The gesso priming can be sanded to a smooth ivory like finish. The most common defect is pinholes, caused by air bubbles of which most are formed usually by a poor first coating. As a general rule, any cracking that is going to develop in a gesso panel will do so immediately after drying. If no signs of cracking are in evidence within a week after drying, one can be pretty sure that no defects will show up. Standard Masonite Presdwood 1/8 " is considered excellent for gesso grounds because of its superior endurance and non-warping qualities, and the good adhesion of gesso to it. One should avoid applying gesso in continually damp surroundings, this has been known to cause cracking.

## **LINEN COVERED PANELS FOR IMPASTO PAINTING**

Artists can glue a good grade of fine linen that has a bold weave of real character to Presdwood. Cut the linen a 1/2 inch to an inch extra all around, cut the corners and press the margin down at the rear of the panel. A solution of 3 ounces ( or 8 tablespoons of the powdered rabbitskin glue ) to a quart of boiling water makes a good adhesive<sup>19</sup>. Coat the panel with glue size, and the back and front of the linen. Make sure that the linen is completely soaked with glue, spread the linen down smoothly with the fingers, and glue the margin down on the back side. When dry, the linen will take any priming, gesso, emulsion, or oil. The smooth surface of the gesso panels does not provide the mechanical grip for impasto painting.

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18 "Pressdwood" refers to hardboards like Masonite and MDF.

19 Acrylic Gloss Gel Medium is now regarded as a superior adhesive for mounting fabric to panel.

Paintings done on panels must be restricted to smoothly applied paint layers unless a linen has been glued to the panel to give it the proper mechanical adhesion necessary for textured or impasto paintings.

### **CRADLING OF GESSO PANELS**

Presdwood does not warp by itself, but unframed panels may bend of their own weight<sup>20</sup>. They may be braced by gluing them to wooden supports made about the same dimensions as stretcher strips, but perfectly flat without beveling<sup>21</sup>. They may be joined at the corners by mitering by tongue and groove, with dowels, or by any other carpentry method, professional or amateur. The panels should not be nailed or screwed, but with Casco<sup>22</sup> ( casein ) or synthetic resin glue, held with cabinet makers clamps while setting. Sizes under 18 " X 24 " are seldom cradled, sized over 30 inches are frequently cradled. Warpage of smaller panels may be controlled by gessoing both sides to equalize the tensions caused by one side being only gessoed.

### **TEMPERA UNDERPAINTING ON GESSO**

Gesso priming can receive a casein, egg, egg-oil or gum tempera underpainting. Using a tempera underpainting for an oil painting possesses many important advantages. The paint film dries with great rapidity, cuts down the operation of painting. A tempera underpainting is luminous as compared with an oil underpainting. Prior to using oil paint or an oil glaze over a tempera underpainting, one should make it less absorbent by sizing by brushing on an extremely thin coat of retouch varnish or one coat of bleached white shellac that has been thinned with 4 parts of alcohol. Oil over tempera underpainting has had the test of time. It is an acceptable, traditional procedure.

### **Summary**

As indicated by this description of grounds, the principles governing their correct use are simple and uncomplicated. Logic and common sense are the keys to understanding it in all of its branches. For the most part, the processes and manipulations are also simple and easy too, and as is so often the case, the easiest way to do something turns out to be the best way. But this simplicity should not lead the artist into the mistaken attitude that careful attention to detail is not necessary because wrong procedures and choosing the wrong materials are the common causes of failure of the grounds, and failures of the ground are often a common cause of defective paintings as all experienced painters know.

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20 Hardboard can distort from the uneven tension of single-side sizing. Sizing both sides of a panel can help equalize tension and keep panels flat.

21 Utrecht Heavy-duty Stretchers have a flat back side ideal for bracing panels.

22 Casco Glue was a dry, powdered casein-based adhesive. Unlike hide glue, Casco could be activated by mixing with cold water. Casein is water-resistant when dry, but like rabbit skin glue is hygroscopic.

Questions? [Ask the Expert](#)

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