

PAINT

Amy Fisher

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-- for more detailed information refer to *The Artist's Handbook of Materials and Techniques* by Ralph Mayer --

Paints are pigments ground into a liquid vehicle in which the pigment remains suspended. Colored substances which dissolve in liquids and impart color effects to materials by staining or being absorbed are dyes. Paints often contain materials which become colorless that are called inert pigments or properties. Various methods of painting - oil, watercolor, acrylic, etc. - differ from one another in the material with which the color is applied and attached to the ground. The pigments used are the same except that some are more suitable for one purpose than another.

Two systems of application exist which are often overlapped - transparent and opaque. Transparent application depends on the white of the ground (paper, canvas) for whites and pale shades, while opaque application achieves whites and pale shades by using white pigment body color.

Pigments originate from inorganic and organic sources:

Inorganic (mineral)

Native earths: ochre (its use dates from prehistoric times), raw umber, ...

Calcinated native earths: burnt umber, burnt sienna, (made by calcining raw umber and raw sienna), ...

Artificially prepared minerals: cadmium yellow, zinc oxide, ...

Organic

Vegetable: gamboge, indigo, madder. ...

Animal: cochineal, Indian yellow, ...

Synthetic organic pigments: alizarin crimson, phthalocyanine blue, Hansa yellow, ..

In general, pigments derived from natural sources are less permanent than the average synthetic color, which is manufactured with the aid of strong heat. Chemical purity of pigments varies greatly; some are simple, almost pure compounds; others of equally high quality contain minor components whether as natural impurities or as the result of ingredients added during manufacture to modify color or pigment properties.

To ensure permanence, select only those colors whose pigment origin is clearly indicated by name. Avoid paints with names that resemble objects in nature, e.g. spring green, sunflower, etc. Student grade paints are loaded with inert pigments such as alumina hydrate or stearate which extend the pigment but lessen the tinctorial strength.

OIL

Oil paints are pigments combined with oil, preferably cold-pressed linseed oil, either raw or refined by mechanical means without chemicals. Due to the varied influence of pigments on oil, various driers may be added to encourage more uniform drying of the paints. Stabilizers (waxes, water, inert pigments) may be added to keep the pigment in suspension and the oil from separating during periods on the shelf. While painting, most artists use a glaze and oil painting medium that makes the thickest paints more fluid and/or thins the body color to allow for transparent application of the paint. A good medium includes stand oil, Damar varnish, pure gum turpentine, and cobalt drier.

Oils are desired for -

- * their buttery consistency, allowing flexibility and ease of manipulation;
- * their color consistency upon drying;
- * the freedom to use transparent glazes as well as opaque application;
- * their resistance to the elements
- * their affinity for canvas, allowing the production of very large work on a lightweight substrate
- * universal acceptance as a fine art medium

Oils may be undesirable because of:

- * their slow (up to 6 months) and uneven drying time
- * eventual darkening or yellowing of the oil
- * possible disintegration of the film by cracking or flaking
- * the necessity to use solvents that may cause allergic reactions

ALKYD

Alkyds are made by dispersing pigment in an alkyd resin binder that has been modified with a non-yellowing drying oil for optimum color retention, excellent durability and rapid drying time.

Alkyds are desired for-

- * their rapid, in comparison to oils, drying time - dry to the touch in 12 - 24 hours.
- * they may be varnished in 30 days
- * all colors dry at the same rate
- * colors dry to a uniform semi-gloss finish

Alkyds may be undesirable because:

- * the solvents necessary for clean up may cause allergic reactions
- * the colors are less buttery than oils

WATER MISCIBLE OILS

e.g. Grumbacher MAX or Winsor & Newton Artisan

Water miscible oils are made by combining pigments, linseed oil and a wetting agent that causes the oils to respond to water, allowing clean up with water.

Water miscible oils are desired for:

- * their easy clean up
- * their affinity for water as a thinning agent
- * their versatility, being mixable with up to 30% regular oil color.

Water miscible oils may be undesirable because:

- * they dry slowly - at the same rate as regular oil color
- * they don't have the same buttery consistency as regular oils
- * blending is a bit harder because the water miscible binder causes drag on the brush

ACRYLIC

Acrylics are made by dispersing pigment in an acrylic emulsion. An emulsion is a stable mixture of an aqueous liquid with an oily, fatty, waxy or resinous substance. Acrylic paints are thinned with water, but, when dry, form a tough, flexible film that is impervious to water. Some pigments used in oil and watercolor are not compatible with the alkaline nature of the polymer medium.

Acrylics are desired for -

- * their rapid drying time
- * their brilliant, vivid color qualities and superior tinting strength
- * their elasticity that does not diminish with age
- * their non-yellowing vehicle
- * water clean up of the brushes (though paint cannot be left to dry on a brush)
- * their ability to adhere to numerous surfaces
- * their versatility - paint can be easily thinned with water or polymer medium for transparent effects, used for airbrush application, or applied thickly to simulate oils.

Acrylics may be undesirable because:

- * their rapid drying time makes blending difficult.
- * colors often dry darker than they appear when wet
- * rich, deep tones are more difficult to achieve than with oil color.

TEMPERA

Tempera paints are made by dispersing pigment in an emulsion, traditionally egg yolk. Manufactured tempera paints may substitute a gum arabic emulsion, wax emulsion, or an oil-in-water emulsion. Tempera paintings are characterized by brilliant, luminous crispness. When left unglazed they have a pleasing flat or faintly gloss finish. When carefully glazed and worked up, they are capable of presenting a highly developed appearance. Depth of tone, if desired, must be brought out by a final application of

varnish or transparent glazes. In America, poster colors sold in jars are often labeled Tempera, and the term is tossed about incorrectly to designate any opaque aqueous medium. True tempera paints are never sold in jars, but in tubes (Rowney's of England is a respected brand).

Temperas are desired for:

- * controllable, systematic application
- * the dried paint film does not yellow or darken with age
- * they are unlikely to crack with age

Tempera may be undesirable because:

- * its range of effects is more limited than oils
- * the inflexibility of its film makes it unsuitable for painting on canvas
- * the paint is less fluid and difficult to blend

WATERCOLOR

Watercolor paints are composed of essentially transparent pigments ground to an extremely fine texture in an aqueous solution of gum Senegal or gum arabic. Whites are achieved by leaving areas of the paper untouched and tints are achieved by using dilutions that allow light to reflect off the paper's surface. Professional quality watercolor paints may be enormously diluted with water and still adhere perfectly to the paper. The ability of the paper to hold pigment particles in its interstices is at least of equal importance with the adhesiveness of the gum in binding the color to the ground. Though watercolor may be thought of as a less permanent medium than oil or acrylic, when permanent colors are used on pure rag watercolor paper and the picture is kept under normal conditions of preservation, it is as permanent as any other medium.

The best substrate for watercolor is paper made of linen rags, with absorbency controlled by the right amount of sizing (a weak solution of gelatin or hide-glue); avoiding spotty, irregular washes, the result of too much sizing; or dull, sunken color in color, the result of too little sizing. The quality, weight and surface of the paper play an integral part in the success of the painting.

Watercolor is desired for:

- * its comparative low cost for beginner materials
- * its portability
- * its unique interactions with water that produce effects achievable by no other medium
- * its versatility for very loose to very tight applications
- * its compatibility with other dry and aqueous materials

Watercolor may be undesirable because:

- * framing is more costly, requiring the use of matting and glass or Plexiglas
- * watercolors and other works on paper, in general, are not as highly regarded by buyers, and therefore, do not command the same sums as works on canvas or board

- * white space cannot be regained once painted over and most colors are difficult to remove or obliterate with overpainting.
- * more technical ability is required for success than with opaque media

GOUACHE

Gouache is made by dispersing finely ground pigments in a larger percentage of gum solution than watercolor, and by adding varying amounts of such inert pigments as chalk or blanc fixe (to improve the color and textural effects, not as an adulterant), resulting in an opaque water-based paint. Gouache has a brilliant light-reflecting quality that lies in the paint surface; its whiteness or brightness comes from the use of white pigments. Gouache paints are highly favored by artists who create work only for reproduction where permanence of the original work of art is not important. Thus some of the brilliant fugitive colors are to be found among the colors for sale. It is important to select paints labeled with familiar pigment names and avoid ones with fancy names.

Gouache is desired for:

- * its suitability to illustration with pen, ink, or airbrush
- * its brilliance, opacity and tinting strength
- * its water clean up

Gouache may be undesirable because:

- * thick paint layers will crack

CASEIN

Casein is made by dispersing pigment in a binder made primarily of skim milk. Caseins dry quickly to a natural dead matte finish that is the primary attraction to most artists using it. The finish can be brought to a satin sheen simply by buffing the dry surface with a soft cloth. If a gloss finish is desired, caseins can be varnished.

Caseins are desired for:

- * their brilliant, permanent and intermixable color
- * their application versatility - from thin washes to impasto
- * water clean up
- * their matte finish which is excellent for reproduction

Caseins may be undesirable because:

- * their inflexible binder prevents heavy application on canvas
- * it is a coarser, less sensitive medium than gouache

ENCAUSTIC

Encaustic is made by mixing dry pigments with molten white refined beeswax, plus a variable percentage of resin (usually damar), working from a warm palette. Encaustic means "burning in", which defines the final step of passing a heat source over the surface, fusing and bonding the paint into a permanent form without altering it. A light

polishing with a soft cotton brings out a dull, satiny sheen. When cool, the picture is finished. If the surface is kept warm, free-flowing manipulations and blending may be carried out as with oil colors or enamels; on a cooler surface touches will stand out brilliantly and separately.

Encaustic is desired for:

- * its permanence even in damp conditions
- * its visual and physical properties
- * its range of textural and color possibilities, making it particularly appealing to certain contemporary styles
- * easy clean up via warming and wiping
- * finished paintings repel dust
- * no varnish is required

Encaustic may not be desirable because:

- * a heated palette and other special equipment is required

PASTEL

Pastels are made by combining pigment with a very weak gum solution and water that allow the pigments to bind into stick or crayon form. The process for pastel painting is one of the simplest and purest since no medium is required. Prepared artists' pastels are sold in grades: hard, medium, and soft. The soft is universally used, the other two for special effects and purposes. Pastels must be painted on a grainy surface that will file off the particles of the crayon and retain them.

Pastel is desired for:

- * its pure color with almost no medium to effect aging
- * its permanence
- * its immediacy

Pastels may be undesirable because:

- * they are fragile and subject to smudging
- * their inherent tonal limitations
- * glazing is impossible
- * framing under glass with adequate space from the pigmented surface is necessary
- * a fixative is usually required to prevent colors from dusting off and if applied too heavily will cause the whites to disappear because of the chalk's low refractive index.