

# Egg Tempera Paint

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## Vocabulary and terms for further study

pigment      binder      solvent      tempera      vellum      parchment

Tempera paint is a traditional colored medium that has been used for centuries. It was used throughout the middle ages both to illuminate manuscript pages and for painting on wooden panels that were first whitened with gesso. Modern materials have all but replaced traditional ones in the form of commercial tempera paint available from art supply stores. Still, the traditional methods of preparation work as well today as they did a thousand years ago.

Like all paints, tempera consists of three basic and specific parts: pigments, binder, and solvent. The pigments are wide in variety, and many traditional medieval ones are highly toxic. It is important to know which ones are dangerous before you decide which to use, and it may be prudent to avoid anything toxic altogether. Artists did die from exposure to their traditional materials, so using caution both in handling and selection of materials is highly suggested. Still, limiting to non-toxic medieval pigments can severely limit the palette available.

Presented here is a simple list of some traditional medieval pigments. There are a lot more recently discovered pigments available, many synthetic. There are also many modern variations of pigments that may be substituted for medieval ones without sacrificing the authentic look and feel of using egg tempera. Also, keep in mind that even if a material is considered to be non-toxic, its powdered form should not be inhaled and hands should still be washed after contact to avoid passive ingestion.

Tempera binder is made primarily from egg yolk, separated entirely from the egg white. The yolk is mixed with the solvent, water, in approximately equal amounts prior to adding it to the pigment. Since this egg emulsion will not keep for prolonged periods, once mixed the resulting paint is used immediately.

<u>Color</u>	<u>Hue</u>	<u>Material</u>	<u>Toxic?</u>
Black	Bone Black	Burnt bones or ivory	No
	Charcoal	Burnt Wood	No
Blue	Azurite	A mineral	Yes
	Indigo	Woad plant	No
	Ultramarine	lapis lazuli mineral	Yes
Brown	Brown Ocher	Dirt, clay, etc.	No
	Umber	Rust stained clay	No
Green	Green earth	Glauconite or celadonite minerals	No
	Malachite	Malachite mineral	Yes
	Verdigris	Acetic acid reacting with copper	Yes
Red	Madder lake	Roots of the madder plant	No
	Red lead	Heating lead oxide	Yes
Red Orange	Realgar	Realgar mineral	Yes
	Vermilion	Cinnabar mineral	Yes
Red Violet	Carmine	Dried insects	No
Red Brown	Red Ocher	Rust stained clay	No
White	Chalk	Chalk	No
	Flake	Oxidized lead	Yes
Yellow	Orpiment	Orpiment mineral	Yes
Yellow Brown	Yellow Ocher	Rust stained clay	No

# Making Egg Tempera

## Materials and ingredients:

- one or more pigments
- bowls, including a mortar and pestle
- water, preferably distilled or boiled and then cooled
- an egg
- a spoon or stick or straw with which to dip water and stir



The first necessary materials are the pigments. Some, like charcoal and chalk, may be easy to locate, while others may be more difficult to track down. Those intent on finding true traditional pigments may wish to locate companies or individuals who specialize in supplying artists with just such materials. Some suggestions of places where such pigments can be acquired can be found in the appendix A. A simple source of strong colored pigments that can be easily powdered is a standard box of chalk pastels.



The pigments must be ground into fine powder. Traditionally, the best tools for this process are a mortar and pestle. The resulting powder should be extremely fine, so be careful not to inhale any dust rising from it. A mortar and pestle usually creates little free floating dust compared to other grinding methods. Placing pigments in a durable wrapper and hitting it for a prolonged period with a hammer is another effective, although messy and dust raising, grinding method.

Once ground, a small amount of water can be mixed into the powdered pigment to make a paste. This will help maintain the integrity of the pigment until it is to be used. Unused pigment should probably be kept in solid or powdered form, but many pastes will keep for prolonged periods of time in a cool place like a refrigerator. There are some pastes, however, that will not keep, or may need to be reground if left to dry. You may wish to experiment with different materials to see how they keep best, but in general, any pigment left in powdered form will remain powdered and usable.



The binder is made by first separating the yolk of an egg from the white. The egg white will not be used in the paint and may be discarded, cooked, or saved for glair if desired. The traditional method of separating an egg yolk from the white is to break the shell as cleanly in half as possible and then to gently pour the yolk back and forth between the two halves until the white eventually falls

away on the outside of the shell. This method is effective, but often difficult to master, so the modern convenience of an egg yolk separator comes in handy if you want a clean yolk the first time.



The yolk should be placed in a clean receptacle of some sort, pierced, and well mixed with an equal quantity of water. The binder is then complete. Since the paint is often applied in thin layers, a single yolk may yield a large quantity of binder for any specific project. Try to use whatever binder is manufactured fresh, discarding any unused quantity. It should last for quite a while when painting, but it will not keep well for prolonged periods. It is always best when used fresh. If the binder begins to thicken prematurely, go



ahead and make some more. Do not attempt to thin the remaining binder with water, since doing so may very well undermine the quality of your paint surface.

Also keep in mind that raw egg may have any of several bacteria present in it. Exercise care when washing your hands and utensils, making sure not to transport any potentially noxious germs to your mouth, eyes, or nose.

## Painting with Egg Tempera

### Materials:

- tempera pigment and binder
- brushes
- water, preferably distilled or boiled and then cooled
- paper, parchment, vellum, or wood sized with a matte gesso



The key to painting with tempera is to mix what you need when you need it. The egg yolk will bind the pigment to almost any porous surface rather quickly once it is mixed and painted. It makes good sense to plan out how the paint will be distributed by first using a pencil or some simple charcoal to lightly draw lines on the painting surface.

When applying the paint, first dip the brush into the binder, allowing a good amount to adhere to the brush hairs. Directly dip the binder laden brush into the powdered or pasted pigment, picking up as much as possible without leaving any binder behind. With the same brush, blend the binder and pigment on a non-porous palette surface until the paint is smooth and consistently mixed. This paint can, and should be, used immediately.



If several colors are to be mixed in this way, make sure that the brush is well washed with water in order to keep extra pigment out of the binder. Tempera will wash out of the brush with water, but it is easiest if the brushes are kept as clean as possible at all times. Dried tempera paint can be quite stubborn. Also, remember that all pigments can stain to some degree, so exercise care of your clothing and surroundings when painting.