

Earth Pigments:

The basic earth pigments are, essentially, dirt. Realistically, all of these are some form of ocher. Common names are Yellow/Orange/Brown/Black/Purple/ Ocher, Pozzuoli Red, Venetian Red, Terre Verde, Raw Sienna, and Raw Umber. Different amounts of iron and/or manganese tint the dirt into different colors. Burnt Sienna and Burnt Umber are obtained by calcinating their respective ochers.

Mediums/Binders:

A medium is essentially a glue that binds a pigment to the painting surface.

Egg Yolk: 1 part egg yolk, 1 part water. Combine, strain.

Glair: Egg whites. Whisk until they form stiff peaks, let sit 1 hour, strain.

Gum Arabic: 1 part gum, 2 parts water. Combine in a double boiler, strain, let cool.

Size: 1 part hide, 10 parts water. Combine in a double boiler, strain, let cool/or not. This is not recommended for ochers but is used in painting panels or walls with pigments formed by rocks.

Additives: Different authors mention different additives to mediums. The most common are, honey, granulated sugar and cloves/clove oil. Honey and sugar are supposed to add flexibility to egg based mediums that have a tendency to crack if flexed. Cloves are used as a preservative and to mask the smell of aged eggs. Modern, commercial formulations of gum arabic solutions that use natural gum might add glycerin as a preservative. Gum Arabic solutions available in art supply stores may or may not ever see the side of an acacia tree. Use all additives in very minute amounts until you are comfortable with your results.

Combining the two (Ochers only):

This process is for mixing very small amounts of pigment at a time. References for using larger quantities are listed in the bibliography.

The first step is to dissolve the pigment powder in water. Place powdered pigment on a tile. This should be about as much as a pinto bean to start. Gradually add a drop of water and work the mixture until it becomes the consistency of toothpaste. Add more water drop at a time achieve this. This creates a mud mixture that can be applied to paper but when it dries almost all of it will flake off and just leave as stain. Remember that this is only about 2/3rds of a finished product called paint.

The second step is adding a binder. I use one of two processes and will explain both of them.

Version one: Add your binder into the pigment paste directly and use immediately to paint your project. This will dry very quickly. It cannot easily be reconstituted. It does work if you want to hurry and do not want to paint a lot of details with a small brush. Not my preferred method.

Version two: I call this a "clean and conditioned brush" method after one on my porcelain painting instructor's teachings. Its main benefit is that if you keep the paint paste wet you have a longer time that you can store your paint.

Protections: (not safety protections, those will be listed below) you do not want to contaminate your mixing water, medium or paint paste.

Use a separate container of water to clean brushes. For mixing paint use a dropper bottle of some sort.

Do not mix medium directly into your main supply of paint paste, move a little paste to a "work" area and then combine.

Do not take your brush from the paint directly into your medium. Clean and dry it first.

Process: (simplified)

Layout your work area in the following way, left to right if you are right handed, reverse if left handed.

project to be painted	palette with paint paste	medium	rinse water: this is not "clean your brush water"
	clean work tile	Viva brand paper towel	Water dropper bottle. NOTE: do not let this get confused with your rinse water if you are not using a dropper bottle.

To paint:

- 1) Clean your brush.
- 2) Dip your brush in your rinse water.
- 3) Pat dry on your paper towels by gently pressing the bristles down with your finger.
- 4) Dip your brush into your medium. Soak all the way to the ferules.
- 5) Pat dry on your paper towels by gently pressing the bristles down with your finger.
- 6) Take your brush to the bottom corner of a color of paste on your palette and combine. If the mixture is too dry, clean your brush and repeat the steps above. Substitute step; put a drop of medium on one half of your work tile and put a little of uncontaminated paste on the other and combine.
- 7) Apply brush to your paper, or whatever you are painting.
- 8) To change colors, or add more paint to your work tile. Start at step 1 again.

General notes:

You will have to be constantly vigilant on keeping your paint paste wet enough to use. This is another reason for your water dropper bottle.

Medium containing eggs or glue are considered "closed" mediums. That means they dry very quickly. Working with small amounts works well in a dry brush method of painting. Wet blending requires more attention to keeping your paint paste moist.

If there starts to become a drying paint build-up on your brush, go back to step 1.

If your paint viscosity is too thick, sparingly use your water dropper bottle.

Oil based mediums are a different kettle of fish and only some of the methods above apply.

You can mix, or combine for shading with tempera, watercolor, or gouache.

Do not use a brush that has ever painted with oil paints or acrylics. If in doubt, use a new brush.

Natural bristle brushes are preferred. Taklon or high quality synthetic brushes work also.

If in doubt, clean your brush and start again.

Gum Arabic solution is the most flexible. You can reconstitute is as opposed to egg based binders.

Different mediums produce different gloss qualities. To some extent, this can be controlled in your medium to water ratio.

Different mediums and medium ratios have different adhesion properties. They have different chance of cracking and flaking depending on the medium and medium ratio.

With practice you will figure out what medium you prefer for what applications.

The Names of all the Colours Pertaining to Washing.

Blews	Reds	Whites	Blacks
Bleu-bice <Azurite> Indico <Indigo>b Blue-verditer <Azurite>	Vermillion Lake Red-lead	Ceruse <White Lead> White-lead pickt.	Printers Black <Lamp Black Ivory Burnt
Greens	Yellows	Browns	
Verdigreece Verditer-green Sap-green Copper-green <Malachite> <Terre Verde = Green Earth>	Yellow-berries Saffron Light-Masticote	Spanish Brown Umber or Haire Colours <Burnt and Raw Sienna> <Ochers of all colors>	

What colours must be Grownd, and what washt.

Grownd.	Washt	These must be steeped only til the water be sufficiently coloured	Steapt
Indicio Lake Ceruse White-lead Spanish-Browne Umber Printers Black Ivory Burnt	Blew-Bice Blew-Verditer Green-Verditer. Red-lead Light-Masticoat		Verdigreece in Vineger. Sap-green in Vineger Yellow-berries in Alum water. Saffron in faire water Copper-green is made of Copper.

The Names of your Colours

Whites	Yellows	Greens	Blews
Ceruse. White-lead	Mafticote Yellow-Oker English Oker	Sap-Green Pink & blew bice Green bice Cedar-green Verditure	Indicio Ultramarine Blew bice Smalt
Browns	Reds	Blacks	
Umber Spanish-browne Cullins-earth	India Lake Red-lead Red-Oker	Cheristone-burnt Ivory burnt Lampblacke	

The Names of all the Colours Pertaining to Washing.

Blews	Reds	Whites	Blacks
Bleu-bice <synthetic azurite> Indico Blue-verditer <azurite>	Vermillion Lake Red-lead	Ceruse White-lead pickt.	Printers Black Ivory Burnt
Greens	Yellows	Browns	
Verdigreece Verditer-green Sap-green Copper-green	Yellow-berries Saffron Light-Masticote	Spanish Brown Umber or Haire Colours	

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In simple terms: Washing refers to pigments that can be prepared with water on a smooth surface with a standard palette knife. A muller and grinding plate may be used with larger quantities, but my personal practice is to mix small batches on demand, or in small amounts in a divided palette.

Grinding/Grinding: Requires a muller and grinding plate, if not also a motor and pestle and wetting agent may or may not be water. Specialist equipment needed, large (and expensive) versions give a quicker result.

Documentation Sources for Period Painting

The following represents books from my library. They contains most of the sources available in English and/or English translations. The purpose of this discussion is to provide research material for painting practices of the Middle Ages with particular emphasis on choosing either paint pigments used in painting and illumining period art or color matching modern paint for work on SCA "scrolls." Attention is given to the "instruction manuals" of period artists.

Using the bibliographies and footnotes of these is an excellent way to expand this list. There is a wealth of information written or compiled by German authors of the twentieth century that can be used as secondary documentation sources.

There are many sites on the internet that would be a welcome addition to this list but with a few of exceptions, I have chosen to omit them because of the impossible task of verifying edited information, and compiling a large enough list to do the subject justice. My exceptions are digital scans of printed books. Google books, Project Gutenberg, and Shipbrook.com are the most familiar but are probably not the only sources of digitalized literature. Students and faculty members of colleges and universities have exclusive access to more digitalized books through their school's libraries.

There are several versions on what is a primary, versus a secondary source. In general, a primary source is one that is written by the person doing an action, or someone that actually witnesses the action. This can be broken down further into the language of the original writing. The ultimate primary source for historical painting, for English speakers, is one that the author writes of his own experiences in English, no translation necessary. Few of these exist, one of the works cited below needs mild translation from the use of word, spelling, and typography from the original, but can still be understood by most scholars and serious enthusiasts.

The second, and more available, type of a primary source is that of translations of works written by the craftsman authors. I would further subdivide these into works that have both the original language and translation and those that are just translations. *The Strasbourg Manuscript*, Merrifield's *Original Treatises*, and the Elder Pliny's *Chapters of the history of Art* are examples that present both languages.

Translated primary sources that do not also present the non-English text are extremely valuable. *Cennini's Il Libro Del' Arte o Trattato Della Pittura* is available under the modern title of *The Craftsman's Handbook*. It is the most common example of such. The second most common translation is that of Theophilus' *Diversarum Artium Schedula* published under the title *On Divers Arts*. It would not be a stretch of the imagination for these two volumes to be the first, if not the only books that a beginning student of historical painting would own.

Translated sources have two valuable pieces of information. First, there is the translated text. Of at least equal value is the translator's footnotes and forwards. It is for this reason that I have a preference to Professor Thompson's translation of Cennini that is only legally available by purchasing a bound volume as opposed to Mrs. Merrifield's translation that can be found online. I examined the parts of my copy of Cennini and looked at where my important passages fell victim to my highlighter and found them in the footnotes. Professor Thompson corrects some of Mrs. Merrifield's translations of difficult passages. He also has a much stronger academic background, being a professor of fine arts at Yale University.

The sources that I have labeled secondary sources are written by contemporary authors that have compiled their own research through practice and study of period examples and texts or text fragments. For example. Tell-tale pin pricks where a divider was used to measure the spacing of ruled lines or chemical analysis of fragments of paint from existing historical painting.

The third source included below are books written recently that are good references for how to paint with powdered pigments or modern paint that was mixed commercially.

Primary Sources

Original Language Sources:

Jenner, Thomas, (fl. 1631-1656) *A Book of Drawing, Limning, Washing or Colouring of Maps and Prints: and the Art of Painting, With the Names and Mixtures of Colours Used by the Picture-Drawers. –or- The Young-Mans Time Well Spent.* London: M. Simmons 1652. Print.

White, Edward, *A Booke of Secrets: Sheaving Divers Waies to Make and Prepare all Sorts of Inke, and Colours: As Blacke, White, Blew, Greene, Red, Yellow, and Other Colours. Also to Write whith Gold and Silver, at any kind of mettall out of the Pen: with Many Other Profitable Secrets, as to Colour Quills and parchment of any Colours: and to Grave with Strong Water in Steele and Iron.* London: Adam Islip 1596. Print
<http://www.shipbrook.com/jeff/bookshelf/details.html?bookid=3>

Translated Sources Including Original Foreign Language

Borradaile, Viola, Borradaile, Rosamund. *The Strasburg Manuscript: a Medieval Painter's Handbook.* New York: Transatlantic Arts. 1966 Print.

Merrifield, Mary Philadelphia (1804/5 – 1885) *Medieval and Renaissance Treatises on the Arts of Painting: Original Texts with English Translations.* New York: Dover Publications. 1999 Print.

---, The following manuscripts are bound in two volumes. Both have the same text as above. *Original Treatises Dating from the XIIth to XV111 of the Arts of Painting, in Oil, Mosaic, and on Glass; of Guilding, Dyeing, and the Preparation of Colours and Artificial Gems; Preceded by a General Introduction; with translations, Prefaces, and Notes.* London: John Murray, 1849. Print

http://books.google.com/books/about/Original_Treatises_Dating_from_the_XIIth.html?id=2xgGAAAAQAAJ

Volume I:

1. *Jehan Le Begue.* (b. Ca. 1368 - Paris) *ITabula de Vicabulis Sinonimis et Equivocis Colorum. Table of Synonymes. (Table of Synonymes and Words of uncertain signification)* March, 1382?
2. *Alta Tabula Imperfecta et sine Incico. (Another Table, Imperfect and without a Beginning)*
3. *Experimts upon Colours. (Experiments on Colours.)*
4. *Petrus de S. Audemar.* (ca. 1410/1420-1475/1476) was an Early Netherlanders painter active in Bruges from 1444.
5. *Lieber magistri Petri de Sancto Audemaro de Coloribus Faciendis (The Book of Master Peter of S. Audemar, on Making Colours.)*
6. *Eraclius* (Several hits found on Wikipedia, all are in early Period.)
7. *In De Coloribus Artibus Romanorum (On the Colours and Arts of the Romans)*
8. Archerius ("it is written on paper, and was transcribed in the year 1431, probably from an older MS., the property of John Alcherius, which passed with his other MSS. Into the hands of Le Begue.... *The most ancient which, like the original, are metrical, while the others are paraphrases in prose, and this is certainly a proof that this part of the Treatise of Eraclius was written before that copy of Theophilus.*"
9. *De Coloribus Modis Tractatur – A Treatise of Preparing Many Kinds of Colours.*
10. *De Diversis Coloribus – On Colours of Different Kinds.*
11. *Additional Recipes by Jehan Le Begue*

Volume 2

12. *Bolognese Manuscript.* (15th Century)
13. *Marciana Manuscript "Secreti Diversi"* (1513 – 1570?)
14. *Paduan Manuscript* "This Manuscript, without the date of name of the author, is certainly Venetian.
15. *Giovani Batista Volpato Manuscript* (b. 1633 at Bassano) Pronounced fit to publish at Vicenza in 1685)
16. *Pierre Le Brun. Brussels Manuscript – (Written 1635)*
17. *Sig. Pietro Edwards (D. 1821 Venice) Extracts from and Original Manuscript – 843*

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18. Sig. Pietro Edwards (D. 1821 Venice) *A dissertation by Sig. Pietro Edwards in the Academy of Fine Arts at Venice on the Propriety of Restoring the Public Pictures*

Pliny, Jex-Blake, K. Trans., Sellers, E. (Contributor). *The Elder Pliny's Chapters on the History of Art*. New York: MacMillan Co. 1896
Reprinted by Kessinger Publishing. *Historia Naturalis*. Print.

Translated Sources without Original Foreign Language

Cennini, Cennino d'Andrea, Trans. Thompson, Jr. Daniel V. *The Craftsman's Handbook*. New York: Dover Publications 1960. // *Libra dell' Arte O Trattato Dell Pittura*. Print.

Theophilus Presbyter, Trans. Hawthorne, John G. Trans., Smith, Cyril. S. Trans., *On Divers Arts*. New York: Dover Publications 1963. *Diversarum Artium Schemata*. Print.

Thompson, Daniel Varney, Jr. *An Anonymous Fourteenth-Century Treatise The Technique of Manuscript Illumination – Translated from the Latin of Naples MS XII.E27, De Arte Illuimandi*. New Haven: Yale University Press. 1933 Print.

Secondary Sources That Reference Period Practices

Alexander, Professor Jonathan James Graham. *Medieval Illuminators and Their Methods of Work*. New Haven: Yale University Press. 1992 Print.

Anderson, Janice. *Illuminated Manuscripts*. New York: New Line Books. 1999 Print.

Backhouse, Janet. *The Illuminated Manuscript*. London: Phaidon Press. 1979 Print.

Baigent, Francis Joseph. *A Practical Manual of Heraldry and of Historic Illumination*. New York: MacMillan Co., George Rowney and Co. Print.

Baxandall, Michael. *Painting and Experience in Fifteenth Century Italy: A Primer in the Social History of Pictorial Style*. New York: Oxford University Press, 1972 Print.

Bradley, John. *Illuminated Manuscripts*. London: 1996 Print.

Brown, Michelle. *Understanding Illuminated Manuscripts: A Guide to Technical Terms*. Paul Getty Museum. 1994 Print.

Clemens, Raymond, Timothy Graham. *Introduction to Manuscript Studies*. Cornell University Press. 2007 Print.

De Hamel, Christopher. *Scribes and Illuminators*. Toronto: University of Toronto Press, Scholarly Publishing Division 1992 Print.

Doerner, Max, Trans. Eugen Neuhaus. *The Materials of the Artist and Their Use in Painting: With Notes on the Techniques of the Old Masters*, Revised Edition. San Diego: Harcourt 1962 Print.

Drogin, Marc. *Anathema*. Totowa, NJ: Allaheld, Osmund & Co. 1983 Print.

Eastlake, Sir Charles. *Methods and Materials of Painting of the Great Schools and Masters*. New York: Dover Publications. 2001 Print.

Hamel, Christopher de. *The British Library Guide to Manuscript Illumination: History & Techniques*. Toronto: University of Toronto Press, Scholarly Publishing Division. 2001 Print.

Merrifield, Mrs. Mary P.. *The Art of Fresco Painting in the Middle Ages and the Renaissance*. New York: Dover Publications. 2003 Print.

Thompson, Daniel V. *The Materials and Techniques of Medieval Painting*. New York: Dover Publications. 1956 Print.

---, *The Practice of Tempera Painting*. New York: Dover Publications. 1962 Print.

Vinas, Salvador Munoz, Eugene Farrell. *Technical Analysis of Renaissance Illuminated Manuscripts from the Historical Library of the University of Valencia*. Boston: Harvard Art Museum. 1999 Print.