HISTORY

Distillation was known in antiquity and early painters used various "turpentines" and resins for the creation of varnishes. Some of these concoctions were actually incorporated into the color but only as mixtures, not as pure solvent.

The contemporary practice of diluting oil color with copious quantities of volatile organic solvent was unknown during the Renaissance.

Widespread use of solvents by artists appears to have begun during the mid 19th century with the advent of cheap and readily available distillates.

The practice of thinning colors with solvent has continued unabated throughout the entirety of the 20th century. It is only recently that we have begun to examine the effects of solvents upon both the environment and health.

Through increased concerns for safety in the handling of art materials it has become apparent that exposure to volatile organic solvents is a primary hazard to the artist.

Solvent based materials may only be safely used in an area with adequate ventilation. This requires an exhaust system that replaces every cubic foot of air with fresh air on a continuous basis. This is also true for odorless thinners whose effects are obscured by their lack of fumes.

Most studios are not efficiently equipped and worst yet, many artists who live in their studios or work within the home environment are exposing themselves, and others to dangerous fumes.

Turpentine and odorless thinners are primarily used in thinning color and cleaning brushes. This can be accomplished without solvents.

PHYSICAL ATTRIBUTES OF OIL COLOR

Color	Drying Rate	Oil Content	Film Character
Alizarin Crimson	S	H	Soft/Flexible
Anthraquinone Blue	S	H	Soft/Flexible
Anthraquinone Red	S	H	Soft/Flexible
Azo Green	S	H	Soft/Flexible
Azo Yellow	M	M	Soft/Flexible
Burnt Sienna	R	M	Hard/Strong
Burnt Umber	R	H	Tough/Flexible
Cadmium Orange	S	L	Strong
Cadmium Red	S	L	Strong
Cadmium Red Deep	S	L	Strong
Cadmium Red Lt.	S	M	Strong
Cadmium Yellow	S	M	Strong
Cadmium Yellow Deep	S	M	Strong
Cadmium Yellow Lt.	S	M	Strong
Cerulean Blue	M	M	Soft/Inelastic
Cobalt Blue	M	H	Hard/Brittle
Dioxazine Purple	S	H	Soft/Flexible
Hansa Yellow (Lemon)	S	H	Soft/Flexible
Indian Yellow	S	H	Soft/Flexible
Ivory Black	S	H	Soft
Lamp Black	S	H	Soft
Manganese Blue	M	M	Hard/Strong
Mars Black	M	L	Strong
Naphthol Red	S	H	Soft/Flexible
Naples Yellow	S	M	Hard/Strong
Olive Green	S	H	Soft/Flexible
Paynes Gray	M	L	Hard
Permanent Green Lt.	M	H	Hard/Strong
Phthalocyanine Blue	M	H	Hard/Strong
Phthalocyanine Green	M	H	Hard/Strong
Prussian Blue	F	M	Hard
Quinacridone Red	S	H	Soft/Semi-Inelastic
Quinacridone Rose	M	H	Soft/Semi-Inelastic
Quinacridone Violet	M	H	Soft/Semi-Inelastic
Raw Sienna	M	M	Tough/Strong
Raw Umber	R	H	Hard/Strong
Sap Green (Permanent)	S	H	Soft/Flexible
Terra Rosa	M	L	Strong/Hard
Titanium White	S	M	Semi-Strong/Hard
Alkyd Titanium White	R	M	Semi-Strong/Hard
Transparent Orange Iron Oxide	R	H	Strong/Elastic
Transparent Red Iron Oxide	R	H	Strong/Elastic
Transparent Yellow Iron Oxide	R	H	Strong/Elastic
Turquoise	M	H	Hard
Ultramarine Blue	M	L	Hard/Brittle
Ultramarine Violet	M	M	Hard/Brittle
Van Dyke Brown	R	H	Tough/Flexible
Viridian	R	H	Hard/Flexible
Yellow Ochre	M	H	Strong/Elastic
Zinc White	S	M	Strong/Hard

Drying Rate: Slow Moderate Rapid Oil Content: Low Medium High

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TRADITIONAL OIL PAINTING
WITHOUT SOLVENTS

A Safer Method for Traditional Oil Painting

Experience the rich feel of traditional oil color without using turpentine, "odorless thinners" or citrus based solvents.

Use Walnut Oil and Walnut Alkyd Medium for a safer approach to oil painting.

Historically artists' created their own color in the texture and viscosity of their preference.

In 1550 Vassari wrote "When the artist wishes to begin, that is, after he has laid the gesso on the panels or framed canvases and smoothed it, he spreads over this with a sponge four or five coats of the smoothest size, and proceeds to grind the colors with walnut or linseed oil though walnut oil is better because it yellows less with time. When they are ground with these oils, which is their tempera (medium), nothing else is needed so far as the colors are concerned, but to lay them on with a brush."

The fine condition of works from this period attests to the correctness of this approach.

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CLEANING

To avoid solvents while cleaning, use Walnut oil in place of turpentine or odorless mineral spirit. Walnut Oil removes color from the artists' tools as effectively as odorless paint thinners. Walnut Oil is a natural vegetable oil that does not evaporate neither does it remove essential oils from the artists' brushs.

To clean brushes while painting, keep two small jars (one "dirty"-one "clean") filled with Walnut Oil-a small piece of screening can be kept in the jar bottom to facilitate removal of color from the brush. As it becomes necessary to clean your brush, dip into the first jar of oil rubbing vigorously to dislodge any color, wipe the oil from the brush on the jar edge and dip the brush into the second jar to remove any remaining color. A final wipe on the jar edge to remove any left over oil completes the process.

The same method can be used at the end of the day. If the brushes are to be put aside for a week or more, a final washing in mild soap and water is recommended.

Reminder: If improperly discarded, rags, steel wool or other waste may spontaneously combust when combined with vegetable drying oils and artists products made with them. Dispose of contaminated waste, immediately after use, in a sealed, water filled metal container.

Solvents have been used effectively in artists' materials from the 19th century onward. Appropriate use of solvent combined with oils and resins produced mediums that often overcame the technical constraints of painting in oil. However, solvents are highly toxic and when used extensively very detrimental to the appearance and permanence of the work.

SOLVENT FREE PAINTING TECHNIQUE

The simplest approach to solvent free painting is to execute the painting directly in one application thinning the color only with a small quantity of Walnut Oil or Walnut Alkyd. Use only the smallest amount needed and apply the color directly to the surface of the canvas. For the greatest permanence, the colors should be applied thinly. When multiple layers of color are required, the technique is quite simple if a few rules are remembered.

- **Paint Thinly**...Heavy applications of color are too massive (ultimately brittle) to age well. Such applications are generally liable to wrinkle or cause cracking. It is a good idea to apply color in such a fashion as to assure that the canvas texture is not lost.
- **Fat Over Lean**... this is the same thing as flexible over inflexible. The first coat of color should have little or no medium. Each successive layer should have slightly more oil or medium added to it than the underlying coat. This has little to do with the oil content of the color-simply add more medium to each layer of color.
- **Thick Over Thin**...Thicker or heavier layers of color need to be applied over thinner layers of color. Often when thin layers of color are applied over thicker layers cracking can occur-this is especially true for whites composed with Zinc Oxide when they form the underlying structure. (Zinc White acts as though it has a high oil content and must be used carefully in underlying applications. It is not generally recommended for use in underpainting unless applied very thinly on a porous ground and allowed to dry thoroughly and hard.) **Note**: Glazes applied with appreciable quantities of medium in very thin layers are an exception to this rule.
- **Slow Over Fast**...Slow drying colors such as Titanium White, Cadmium Red, etc. should be applied over faster drying colors such as Burnt Umber to avoid cracking. In addition, sufficient time should be allowed for the underlying layer to dry thoroughly.
- **Use a sufficiently porous ground with "tooth"**...Oil colors adhere by mechanical adhesion. This requires a ground coat that the oil can sink into and some surface irregularity to grab onto. Linen or cotton canvas prepared with a first quality acrylic gesso fulfills this requirement nicely. Remember that gesso, like your color, needs to be applied thinly and the more one preserves the texture of the canvas weave, the better the adhesion of the color.
- **Use the same medium throughout the painting**...This will help to avoid difficulties in the painting structure that can lead to cracking due to uneven drying rates.

Note: Although Titanium Whites have only a moderate oil content, to assure that they are adequately flexible for the artists' needs, they have been formulated to perform like high oil content colors. Because of this, care must be taken in multiple layer applications to follow the rule of "Fat Over Lean".

All M. Graham & Co. products are certified by an independent, board certified, toxicologist for conformity to ASTM D4236 under LHAMA in a manner consistent with consumer Product Safety Commission Guidelines. For health and safety information please refer to our Material Safety Data Sheets. You may obtain a copy of our Material Safety Data Sheet by telephone, fax, email or at www.mgraham.com.

M. Graham Oil Colors and Oil Mediums are completely compatible with other artists' oil mediums and oil or alkyd colors.

Every Artist Deserves The Finest Color That Can Be Created.