

Developed in collaboration with Conservator James Bernstein and Golden Artist Colors, Inc.

## Stretching Unprimed vs. Pre-primed Canvas for Painting

### Pre-stretching Unprepared Canvas

For ultimate fabric choice, unprimed canvas offers the most possibilities. The artist is not limited by the variety or size of fabrics available pre-primed.

If starting with unprepared linen, cotton, or other fabric for painting, preliminary preparation of the canvas is essential. A common misunderstanding is that the application of size or ground layer coatings will correct or compensate for all sorts of inadequacies in canvas stretching. This simply is not true. Pre-stretching is the step often omitted that will insure a canvas of superb suspension.

When a natural fiber canvas is thoroughly wet with water, the fiber bundles swell. This causes the threads to fatten and shorten, and the canvas becomes dramatically tighter. This tightness is short-lived; upon drying, the canvas relaxes again. If wet without being under constraint, a fabric will shrink, but will also distort, then dry unevenly. If wet while under restraint, as in a stretched mode, the fibers will slip a little from the temporary shrinkage, and upon drying the canvas will become slack again. However, having been acclimated by pre-stretching, the threads will be nicely aligned in their respective directions. The fabric tension, although limp, will have a lot more evenness to it.

Traditionally, pre-stretching is abandoned. The artist goes directly to the final stretching, wetting and sizing the canvas in one step with animal protein glue size. The canvas shrinks when wet and upon drying, wants to become limp, however a contractive glue size has been introduced to fill some of the space between threads, to seal the outside of the threads, and to pull the canvas taut, counteracting the natural inclination of the canvas.

This sets up an interesting symbiotic relationship between the canvas and

traditional size. A stretched linen canvas by itself on a humid day would become taut. When there is an animal glue size on a linen canvas, the animal glue swells and the canvas becomes less tight. Conversely, a linen canvas by itself on a dry day would become limp. However, animal glue under dry conditions shrinks and becomes taut. Thus the opposite natural behaviors of linen and animal glue are dynamically opposed and help hold each other in tow.

This dynamic is not as well balanced for cotton canvas. Cotton differs from linen in that it often becomes limp instead of tight on a damp day. This is especially true for unsized cotton canvases where passages of the cotton are left uncoated.

Acrylic dispersion mediums and acrylic grounds (which = acrylic dispersion + pigment) behave differently from natural animal (rabbit skin) glue sizing or grounds. Upon drying, they are not comparably contractive. They are not as responsive to humidity changes as hide glues, but remain quite responsive to humidity shifts nonetheless. They relax and become more plastic under high humidity and become much tighter in low humidity. They will not be resoluble with water should the canvas become wet, are not as vulnerable to cracking, and are not nearly as susceptible to bacterial attack. Acrylic sizing is generally bulkier than animal glue sizing. This helps to fill in and lock the weave.

The concentration (the strength of the solution) of animal glue or acrylic sizing has a major effect upon canvas tautness. Some artists rush through the stretching phase, not paying particular attention to tension applied or the tacking interval, spacing tacks or staples too widely apart (say 3" to 5" between staples). They then look to compensate by strengthening the concentration of animal glue size to get the canvas to pull adequately taut.

The danger in all of the above is stretching and sizing simultaneously, locking

the weave in an unfavorable position. It is wisest to pre-stretch as a separate step. This aligns the weave as fabric tension is estimated. If a fabric is very responsive, the first stretching may be done barehanded (without pliers), as the canvas should not initially be stretched too taut. Allowance has to be left for subsequent wetting and rinsing that will tighten the fabric significantly (albeit temporarily).

The pre-stretched canvas should be gradually and uniformly moistened and then thoroughly wet. A garden hose, with the nozzle set for "fine mist", is effective for the overall misting the fabric. The nozzle is then adjusted to "jet" and the canvas is showered aggressively, front and back, for a few minutes. (This step is best performed outdoors). The wetting of the canvas will cause the threads to fatten and swell, making the canvas extremely taut. IT IS IMPORTANT not to do an overly tight first stretching: the tremendous contractive forces from wetting could cause thread slippage, breakage and stretcher splitting.

After washing, set the stretched canvas aside, off the floor on foam blocks, to dry thoroughly.

With orientation accomplished, the canvas may then be re-stretched with an exceptionally good estimate of final canvas tension.

### Second Stretching

After pre-stretching and wetting, the canvas will be wrinkle-free, nicely aligned and significantly limper than when first stretched. The canvas is now ready for the "true" stretching. The second stretch is performed as the first stretching, except this time canvas pliers will be needed for added pull.

Even on the second stretch, I recommend securing the fabric with pushpins. It is wisest to set aside the stretched canvas pinned on its stretcher for a day or more before setting with staples/tacks. With

climatic shifts and the passage of time, the canvas will relax and settle onto the stretcher, giving a true indication of how even or not the stretching is. If puckers, draws or slack passages appear, the pins may be removed from those locations and the canvas re-stretched as needed.

The pins should not be removed from the stretcher edges until the canvas is completely stapled or tacked. Only then may the sizing and/or ground coatings be safely applied. These coatings will ameliorate some of the canvas texture, especially if several layers of acrylic ground are applied and smoothed into the weave in the process.

## Stretching Pre-primed (Gessoed) Canvases

An uncoated textile is extremely flexible and forgiving. It may be pulled, pushed, rolled or folded without substantial ramification. Once coated with sizing and ground layers, however, a canvas is changed into a multi-ply, laminate construction. The weave is now locked in position. It is no

longer responsive nor forgiving to pulling, pushing, rolling or creasing. If a primed canvas is flexed or abused, the internal structure of the fabric and ground will be broken and continuity/cohesiveness will be lost. Such disruptions will develop as cracks in the priming; even if painted over, the cracks will work their way upward or make their presence known. The crack by itself is not the only unsatisfactory aspect of the alteration. Once continuous tension is broken in a canvas painting, cupping or forward curved (concave) lifting of ground and canvas often occurs on the faces adjacent to the crack. These planar distortions are readily disturbing when oblique (raking) light traverses the painting, accentuating the crack patterns.

Commercially prepared primed canvases are the most straightforward to stretch, as the fabrics have been pre-aligned (to varying degrees), pre-coated and smoothed with sizing and ground. Upon purchase, they are ready to "stretch and paint". Because they are sized and primed, the fabric

weave is locked in place; there is not a lot of give or play in the fitting of the canvas onto a stretcher. Too much pulling, stretching or sharp bending will over-part the priming and produce cracks in the ground and breaks in the fabric. As with any material, coaxing and encouraging it to respond, rather than forcing, will produce the best results. If performed well, only one stretching may be needed.

For further discussion and resources regarding canvas preparation and stretching, see:

Bernstein, James. *A Remarkable Way to Stretch Canvases (and other Essentials of Canvas Preparation)*. JUST PAINT New Berlin, NY: Golden Artist Colors, Inc. Issue 17, September 2007.

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