

Coat a screen with emulsion or capillary film

BY DOUGLAS GRIGAR

Printwear's annual How-To issue is a great resource to keep on hand year-round to refer to as you enhance your business. But it can also be a good tool to help you get back to the basics. In this spirit, I decided to tackle the simple basics that come before applying a photo stencil. Here, then, is an illustrated guide of my most favored procedures of applying the two most popular photo-reactive stencil materials: liquid emulsions and capillary films.

This guide will present one method for each of these top choices—methods that are widely applicable to the available products. My one disclaimer is that specialty products such as thick, heavy-coating liquid emulsions and special-purpose capillary films may require alternate methods. Be sure and ask your manufacturer or check their website for technical specifications. That said I'll start with the basics of coating screen mesh with a liquid emulsion product, adding some hints and tips along the way.

Step one: Get ready

The most widely-implemented tool for coating a screen with liquid emulsion is the coating trough, so this is the method we will review (though I'm not in denial that other methods and tools exist). In this case, clean the coater—your mesh degreaser works wonders—and check for flaws or damage to the coater's surface edges.

All good and clean? Fill the coater with emulsion until the level is about 1/2- to 3/4-full (choose a comfortable level of fill) and position your screen into a rack for two-handed coating. Building or buying a screen holding rack allows a two handed coating that is often far more comfortable and consistent. No time or resources? You can make do. Grasp the screen firmly and hold in position with your free hand to coat single-handedly.

Coating the screen in an upright/vertical, or *almost* vertical, position without changing the angle of the frame will help with

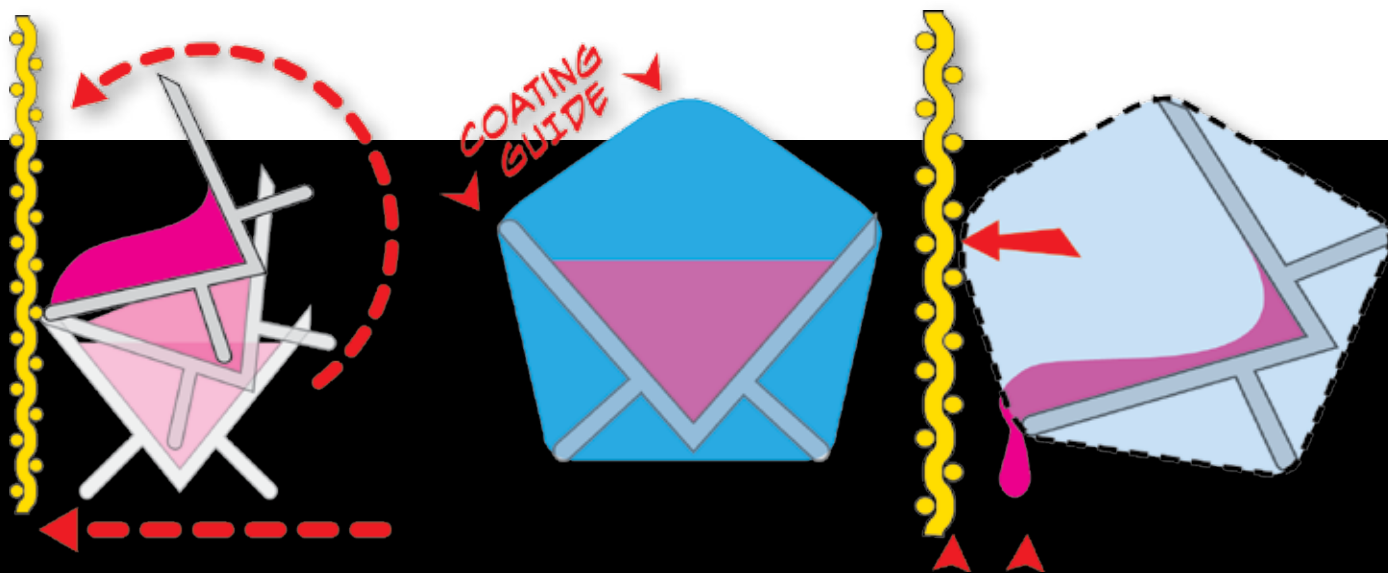
consistency. Holding the screen vertical will allow tilting of the screen into the coater at the beginning and end of the stroke, preventing spills.

Tips: Always make sure the emulsion is level in the coater. Get into the habit of setting the coater down on a level surface when not in use; it is very easy to forget about the emulsion inside the coater and tip the unit, spilling the emulsion.

Always choose a coating position that is comfortable and an area that allows unobstructed movement of your hands and arms.

Step two: Positioning

Starting at the bottom of your coating stroke, place your coater against the mesh, press into the mesh and rotate the coater into the mesh. Tipping the coater into the mesh is almost like a fixed-point rotation: Slowly rotate the coater until you reach the desired position or until the coating guides touch the mesh.



A coating trough is designed in such a way that, with application of proper technique, a smooth, even coating is easily achieved. Note that the image at right does *not* depict proper technique, as the trough has been tipped beyond the coating guide, allowing emulsion to spill.

The emulsion will start to flow onto the mesh. Once the emulsion has reached the mesh across the *full length* of the blade of the coater, you can start the coating stroke.

I suggest starting the coating stroke just a tad above the edge of the mesh and the frame. You can fill that empty open mesh with a block-out product if needed.

Tip: Make sure to place the guides against the mesh but *do not* push the guides *into* the mesh, this creates a second lever point and can cause the blade of the coater to lift from the mesh and spill.

Step three: Coating travel

Make sure you apply a considerable force to the coater to keep the blade in intimate contact with the mesh all across the coater. You *must* keep the pressure on the blade pressed against the mesh at *all* times.

Start your coating stroke, keeping the pressure on the blade against the mesh, and move the coater up the mesh to apply the liquid emulsion.

Tips: Timing or consistent speed in moving the coater along the mesh is everything! Any change in speed or pressure

will change the thickness of the coating.

Move the coater more slowly than you want to. Coating should take about two-to-three seconds for each 24 inches of mesh. Count out until you know the speed by feel or “ear.” (Coating with pressure applied to the mesh has a zipper like sound.)

You can also use that sound to help with the coating procedure. Any changes in the coating pressure or speed will be evident in the sound the blade makes while against the mesh.

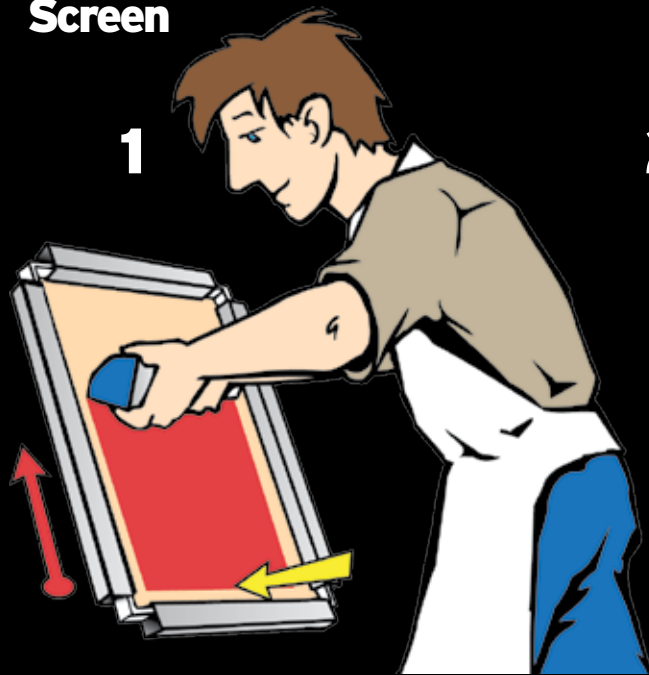
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Coat a Screen

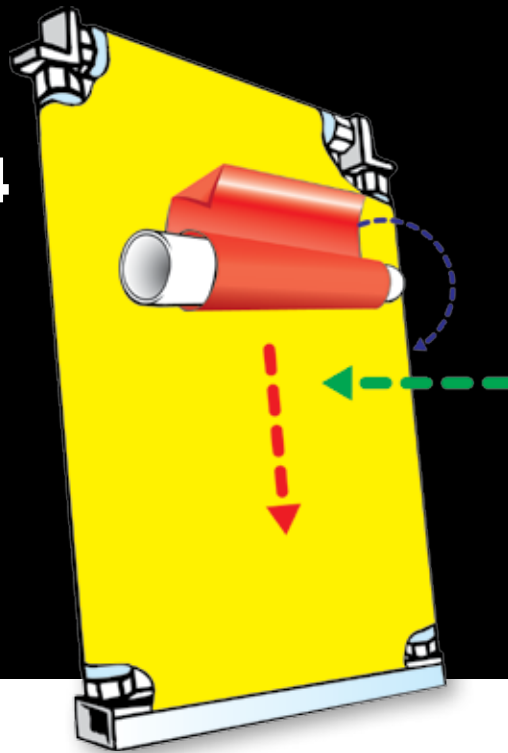
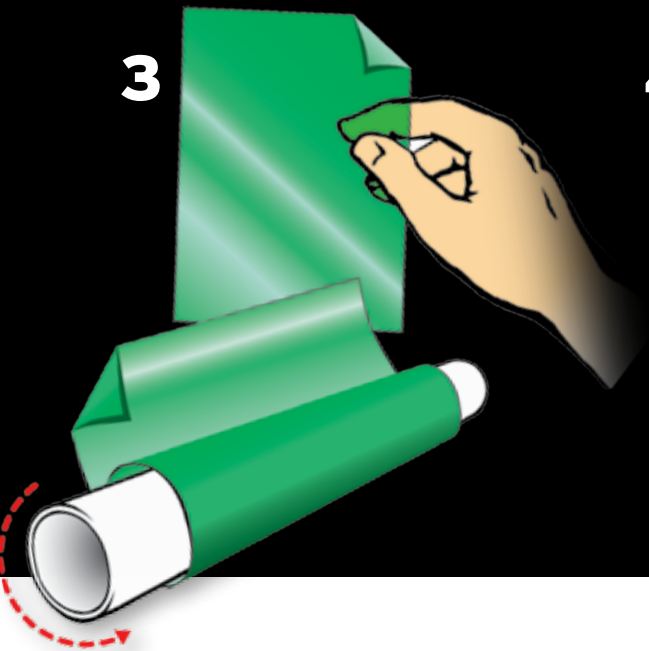


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Step four: Ending the stroke

Once the stroke nears the end of your intended travel, stop the movement of the coater and rotate the coater back, away from the mesh, allowing the liquid emulsion to flow back into the coater.

Tips: When rotating the coater away from the mesh, make sure to keep the same pressure on the coater blade against the mesh. Releasing any pressure at this point would cause the emulsion to spill.

When the emulsion has flowed back into

the coater, continue the stroke for the last short distance of an inch or so for a “dry scrape” all with the continuous pressure against the mesh. You should now be able to pull the coater away from the mesh without spilling any emulsion.

You can use this same procedure on both sides of the mesh while coating, coating the squeegee side requires tilting the screen to the coater or a quick movement or jump into the frame before the emulsion starts to flow.

Step five: Dry the screen

The hard work is done! Place the emulsion-coated screen squeegee-side up and face-side down into your drying cabinet.

Capillary films: behind the mystique

Capillary films have a strange mystique attached to them for many in our industry. I have always found this odd for a product that is so basic and useful. Part of the problem is simply that the name capillary film is so misunderstood. Hence, I

find myself calling them “emulsion films” in classes and conversations because so many screen printers think that they are something hugely different and foreign when the fact is, they are simply sheets of film backing with an emulsion layer on one side.

And they simplify the drying cycle as well. Utilizing the wet roll-on method of applying capillary films, as I’ll demonstrate here, you can eliminate one wet and one drying cycle from the typical procedure of stencil application.

Step one: Cleaning the mesh

Capillary film uses the travel or flow of water to complete the adhesion to the mesh (the reason for the name). As such, it is sensitive to contamination on the mesh. Because screen mesh should be thoroughly clean, take care to remove as many contaminants as possible from the mesh with degreasers, stain/ghost removers and degreasers. Often capillary film makers will suggest a particular regimen of cleaning chemicals and procedures.

Step two: Chemical preparation with a wetting agent

I discourage my students from abrading screens because it damages the threads of the mesh. As an alternative, I encourage the wet roll-on method on clean mesh using one of the capillary film preparation chemicals, often referred to as a “wetting agent.” These are chemicals that improve the flow of water around the mesh threads, helping the emulsion from the film flow with the water into the mesh openings and aid in adhesion.

Most of the wetting agents will also include a degreaser to combine the two steps. Once applied to the mesh, a slight agitation with a brush and a thorough rinse with water will show that the water will “sheet” over the mesh, creating a smooth layer for the film application.

Step three: Ready the film

Prepare the capillary film by rolling it onto a tube of plastic pipe (I prefer 1.5” to 2” pipe) with the emulsion side out to, roll onto the mesh. If you are not sure which is the emulsion side, moisten a finger and touch a corner: The emulsion side will stick! Be sure to touch the film as little as possible, as every area touched to skin is likely to be contaminated and will not adhere correctly. I often prepare several sheets of film in advance by carefully clipping the edges to the pipe with clothespins and placing them into a clean, light-safe box.

Step four: Flood the screen

Just before rolling the film onto the mesh, flood the screen with copious amounts of water to gain a good sheeting layer of water on the mesh.

Step five: Apply the film

Position the roll so that the film will unroll down the screen, pressing the starting edge to the mesh. While rolling, press your fingers into the pipe and press the film to the mesh while unrolling down. This movement acts as a squeegee as well as ensures intimate contact between the mesh and the film product.

Step six: Dry the screen

Drying capillary emulsion film is similar to drying liquid emulsions, except the frame’s position in the dryer is unimportant with film, as the film backing holds the emulsion to the mesh. Make sure you peel the film backing off the emulsion *before* you expose for you final stencil!

Note: A demonstration of this application is viewable on www.YouTube.com by searching for “Douglas Grigar” and “capillary film.”

Every great print needs a great stencil. For beginners, applying emulsion may seem difficult. But with practice the procedures are simple and quick. PW

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