

DIRECT EMULSION: THE GOOD, THE BAD & THE UGLY

By Mick Orr
Applications Training Specialist

Every now and then I get a call from a screen maker who asks me how far a gallon of emulsion will go. Good question. The easy answer is, "Until it's gone." But, of course, this isn't the response you would give a customer.

The trouble with calculating how much area a quantity of emulsion covers is that there are many variables that greatly influence the area being coated.

Let's look at a few of these variables.

1. Mesh count. Every mesh has a specific mesh opening and thread diameter. Even within the same mesh count you can have different thread diameter and mesh openings. 230 mesh can be type "S," "T" or "HD." All monopolyester mesh is put into these categories. While I may be nit-picking, the fact is you will put a different amount of emulsion onto each mesh.

2. Mesh tension. The tighter the mesh, the more control you have putting the emulsion onto the screen. Don't believe me? Take a loose screen (under 15 newtons) and run your emulsion across it with a scoop coater. Dry it. Now take a nice tight screen of the same mesh count and coat it the same way and dry it. Compare the two screens. The loose screen has a lot more emulsion on it than the tight one.

3. Scoop coater. Every scoop coater will yield a different amount of emulsion deposit. If you use a sharp edge coater, it will coat thinner than if you use a rounded edge scoop coater.

4. Operator. Every human on earth is different. That's what makes the world go 'round. Unfortunately, that's what makes the screen go wrong. Even if you are the only one coating screens, they will all be different because controlling the speed and pressure of the scoop coater is handled by muscles. As fatigue increases, the coating changes. Also, the faster you coat, the more the coating changes. Too much pressure is usually put on the screen maker, and this pressure causes the screen maker to rush a screen. Any time you rush a job you're asking for trouble.

5. The emulsion itself. Every emulsion coats differently. It depends on the solids content, the temperature, and the viscosity of the emulsion. The higher the solids, the heavier the coat of emulsion. The colder the emulsion, the "thicker" the emulsion becomes. The viscosity of the emulsion can be different from manufacturer to manufacturer even though the solids content may be the same. This viscosity will yield a different thickness. So, how far will a gallon of emulsion go? There is a wide range between 30 and 50 square feet a gallon depending on your conditions.



Looking for insight on the wonderful world of screen making? Consult the writings of Chromaline's Technical Guru, Mick Orr, Applications Training Specialist.

Mick has been in the screen printing industry since 1970 with printing experience in a wide range of applications from membrane switches, to textiles, specialty graphics to faceplates and more. His hands-on seminars have been appreciated by screen makers around the world.



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