

Tech Tip 7

Photopolymer Plate Finishing

After washout and drying, the surface of a MacDermid photopolymer plate is tacky. The degree of tack depends on the type of polymer and washout conditions. Storing plates without removing some of this tack will cause the plate surface to stick to other plates or job jackets and unusable. Tacky plates also have undesirable performance characteristics during printing. Ink, paper dust and lint may build up on the sticky surface causing dirty print.

Finishing Removes Plate Tack

There are a number of plate finishing options available. Some are temporary and must be repeated each time the plate is stored. Others are permanent. Permanent finishing requires special equipment or the use of chemicals. The following is a discussion of these options.

Temporary Treatments

Powders - Plates can be dusted with talc and fine cornstarch prior to being placed in storage. Powders are inexpensive, easy to apply, and easy to clean off of bold copy. However, they are messy and difficult to clean out of fine reverse copy. Powders do not prevent the printing problems caused by tacky plates since they eliminate tack only during storage.

Release Sprays - Release sprays are not recommended for use on photopolymer plates.

Detack Sprays - “Detac” brand spray is very effective for reducing tack. It does not enhance ozone resistance. Detac can affect ink transfer and may not be suitable for some applications. If left on the image surface during printing, Detac will gradually be removed by abrasion and ink solvents. It can be cleaned from the plate with alcohol and a stiff nylon bristle brush. Detac spray contains a chlorinated hydrocarbon solvent so it is NOT RECOMMENDED for plates that contain halftones or process color copy.

Permanent Finishing - A MacDermid plate that has been permanently finished does not require special cleaning before printing or additional tack suppression treatment before storage. However, permanent finishing does require investment in special equipment. There are two methods of permanent finishing: germicidal light and chemical bath.



Light Finishing - The best method of permanent finishing uses germicidal lights. It is called light finishing, and requires special equipment to perform. Light finishing is recommended for most photopolymers but is NOT RECOMMENDED for Type FL-1 photopolymer.

MacDermid plates can be light finished after following the standard procedures for exposure, washout and drying. Some equipment will finish and post expose plates simultaneously. This requires a finishing unit with dual lamp systems (both UV and germicidal) to provide both medium and short wavelength ultraviolet light. If your germicidal light unit does not have the dual lamp system design, the recommended procedure is to light finish first, then follow with post exposure in your standard exposure unit.

Normal light finishing times for most plates are 8-10 minutes and should not exceed 15 minutes. Once the finishing cycle is started, it must not be interrupted. Use only that exposure necessary to eliminate tackiness on the floor of the plate; test for tackiness using polyester coversheet or tissue. Light finishing produces excellent ink transfer characteristics, which, unlike chemical finishing, are unaffected by the finishing time.

Chemical Finishing - The other method of permanently finishing plates is a chemical chlorination bath. Dry plates are immersed in an acidic bleach solution (the finishing bath). Chlorine gas is produced when the finishing bath chemicals are mixed. This chlorine reacts with the photopolymer to chemically seal the plate surface. **BECAUSE CHLORINE GAS IS TOXIC AND CORROSIVE, THE FINISHING SOLUTION MUST BE PREPARED AND USED IN AN ENCLOSED, APPROVED FINISHING HOOD WHILE WEARING PROPER PROTECTIVE ATTIRE.** Refer to the MacDermid Platemaking Manual for detailed instructions on the chlorination procedure.

Optimum finishing conditions must be determined by each user based on circumstances. Customary finishing times range from 30 seconds to 2 minutes. Use the minimum time needed. Overfinishing can cause poor ink transfer characteristics and make plates brittle.

For best results with chlorination, add Kodak Photo-flo® 200 to both the finishing bath and the rinse water. Photo-flo is a wetting agent that aids the development of a uniform finish. It is available from photo supply stores. Follow package directions for use.

Troubleshooting

To help flexographers identify and correct problems related to plate tack, we have prepared the following Troubleshooting Guide. Remember that some problems that appear to be related to finishing may actually be due to press setting, ink composition or ink viscosity.



Troubleshooting Platemaking Problems

| PROBLEM | PROBABLE CAUSE | CORRECTIVE ACTION |
|--------------------------|---|--|
| Tacky plates | Weak finishing solution Finishing times too short Inadequate plate rinsing or wiping Plates not washed out completely Drying time too short | Recharge or replace finishing solution Increase finishing times Use recommended rise and procedure Back exposure/washout test Replenish or replace washout solution Check drying temperature and time |
| Plate cracks when flexed | Finishing time too long Post exposure too long | Use recommended finishing times Use recommended post exposure times FL-1 and FL-AL only, post exposure before finishing Store away from light |

Troubleshooting On-Press Problems

| PROBLEM | PROBABLE CAUSE | CORRECTIVE ACTION |
|--------------------------------|---|--|
| Plate print with mottle | Ink viscosity too low Ink drying too fast Plate overfinished Orange peel (see Platemaking) | Add fresh ink to increase viscosity and strength Use coarser anilox roll Check for poor plate rinsing Check for overfinished plate Decrease ink drying speed |
| Plate transfers too little ink | Ink viscosity too low Plate overfinished Metering roll set too light Printing pressure too light Anilox ruling too fine | Add fresh ink to increase viscosity and strength Check anilox roll setting Use coarser anilox roll Check for overfinished plate Use high strength ink |
| Plate becomes tacky during run | Incompatible ink Incompatible washup solution | Check compatibility of MacDermid material in ink and washup solvent Use recommended post exposure and |



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| | Post exposure too brief | finishing procedures |
| | Insufficient finishing | |

