

# Printmaking Department Manual

This manual contains printmaking procedures and appropriate safety precautions for all areas of the Printmaking Department. Though you may be taking classes in a studio/shop in one area of the building, be mindful of appropriate behavior and precautions for the entire Printmaking Department, as you may be exposed to any materials being used by others as well.

- Part 1: Access to the printmaking department
- Part 2: Acid safety guidelines
- Part 3: Using oil based inks and solvents
- Part 4: Ventilation: procedures to reduce toxic vapors
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- Part 8: Letterpress
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**IN CASE OF SERIOUS ACCIDENT or SECURITY EMERGENCY:**

- Call MICA Community Safety at **extension 3333**  
then call **9-911** for Baltimore City Police or paramedic.
- Immediately notify instructor, shop tech, or monitor

# Part I: Access to the Printmaking Department

## CARD ACCESS

All students who are registered for printmaking classes are given clearance for MICARD access to the front door of the Dolphin Building. If your card does not work after the first week of classes, go to the Campus Safety office (1212 Mount Royal) to reactivate the card. Sometimes it is necessary to go back several times.

## HOURS

The Dolphin Building is normally open from 7:00 AM to 2:00 AM during the regular school year. (Summer hours are limited and are for students enrolled in summer printmaking classes only.)

## STUDIO USE

Students are permitted and often required to work outside of class in the printmaking studios. Note the posted schedule of printmaking classes. You may not work independently in a shop while another class is being held unless you ask the permission of the instructor conducting the class beforehand.

## SAFETY IN NUMBERS

The Dolphin Building is the only building that does not have a guard stationed full time. The printmaking shop tech provides supervision for some hours outside of class as posted. However, we recommend that you always work with a partner when working outside of scheduled class hours for both personal safety and in case of an accident.

## FRONT DOOR

Do not compromise the security of yourself and others in the Dolphin Building: Do not leave the front door propped open at any time, either for friends, for a quick trip to the store, or because your card does not work!

## COMBINATIONS

Push button combinations to the doors to the three floors and the letterpress studio are given to students by instructors of the relevant classes. Do not give out these combinations to anyone except printmaking classmates.

## ACCESS FOR THOSE NOT ENROLLED IN CLASSES

Students currently not enrolled in classes who wish to use the printmaking facilities may do so only with the permission of the department chairman or shop tech. Prior experience with a printmaking class is normally a prerequisite. Forms are available in the printmaking office for an independent project proposal and security clearance.

## Part 2: Acid Safety Guidelines

Several different acids at varying concentrations are used in the print shop. All are corrosive and must be used with caution and at locations with local ventilation. Before using acids, review all precautions and emergency procedures.

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#### ACID SPLASH IN EYES:

**Flush at eye wash station for 15 minutes, then see a doctor.**

#### ACID CONTACT WITH SKIN:

Remove any contaminated clothing. Rinse thoroughly with running water. Apply sodium bicarbonate (baking soda) directly to affected area. For severe spills, use emergency shower in intaglio room and get medical advice.

#### ACID SPILLS:

Neutralize with sodium bicarbonate (baking soda). Wear gloves and mop up with spill kit materials or newspapers and paper towels, then thoroughly rinse with water. Dispose of materials properly in plastic bag.

**Wear approved gloves\*, apron, goggles, and/or a face shield** when handling any pure acids. **AVOID SKIN CONTACT, EVEN WHEN HANDLING DILUTED ACIDS.** Locate the eye wash and emergency shower before working with any corrosives. (\* Gloves make handling drop bottles in litho difficult, so do not wear gloves in that case.)

**“Do as you otter, add acid to water.”** Always pour acid into water or gum arabic, never the reverse. Pouring water into acid may cause a violent heat-producing reaction.

**Avoid breathing acid vapours.** Acute burns to your respiratory system can occur. Though the acid room is equipped with good local ventilation, for prolonged use of the acid room, you may want to wear a respirator with appropriate acid-absorbing cartridges. When using small solutions of concentrated acids such as for “spit biting,” set up at a local ventilation source, such as in spray booth or at litho processing counter.

**Close lids on acid baths when not in use** to preserve strength and reduce vapors and/or mists.

**Do not lean directly over acid baths! Avoid breathing vapours!**

**Be extra careful with splashes or spills when putting plates into the acid baths.** If splashes occur on clothing or skin, immediately wash with running water.

**Use white *plastic* spatulas** to assist in removing plates from acid baths. Allow acid to drain from plate over acid bath. Thoroughly rinse plate with cold running water in sink. Do not use metal spatulas in acid baths!

**Only the shop tech is to change or modify acid baths.** Acid solutions are changed once every two weeks. However, their strengths can weaken depending on use. Ask the shop tech to change acid baths if baths seem weak. Do not attempt to mix or spite the plate etching mordant; only staff or faculty may do this.

**Do not use white ground in these acid baths!** Consult with the shop tech in order to set up special bath.

**Do not wear contact lenses in acid room!** Wear glasses instead of contact lenses in etching studios to avoid acid mists under contact lenses.

## List of acids and their uses and dangers:

### NITRIC ACID

Mixed 8/1 and 11/1 with water for two strengths of baths to etch zinc. Also mixed by drops with gum Arabic to etch litho stones. Produces highly flammable hydrogen gas when etching zinc, though hydrogen gas itself is not a health hazard. Strong solutions can heat up and produce nitrogen oxides, a dangerous chemical.

### DUTCH MORDANT

A mixture of potassium chlorate, hydrochloric acid, and water for etching copper. Generates highly toxic Chlorine gas when first mixed. Potassium chlorate is very combustible, and may explode from impact or spilling into rosin dust.

### PHOSPHORIC ACID

Anti-tint solution and for counter-etching stones. Very toxic by all routes of entry. Always use diluted.

### HYDROCHLORIC ACID

Ingredient in Dutch Mordant. Also used for litho counter-etch.

### ACETIC ACID

Mixed 1 cup (8 oz.) per gallon water for degreasing intaglio plates. Not harmful as diluted but can cause severe burns at full strength. (Vinegar is a form of dilute acetic acid.)

## Part 3: Precautions and Procedures for Using Oil-based Inks and Solvents.

Regular and prolonged use of oil based inks and solvents without appropriate protection can lead to allergic reactions and dermatitis through skin contact. Some inks contain pigments and ingredients that are more toxic than others.

### BEFORE USING OIL-BASED INKS

Use a barrier cream and/or put on gloves to protect your hands before you begin to work. This is particularly recommended while inking plates

### WEAR GLOVES FOR ALL OIL-BASED INK AND GROUNDS CLEANUP!

Please note that latex gloves are provided by the department, but these are good only for keeping hands clean of ink, etc., not for keeping solvents from getting into the skin. **Nitrile gloves must be worn to protect from solvents**; these gloves may be reused for up to a year.

### SOLVENTS FOR CLEANING:

USE VEGETABLE OIL for initial cleaning of oil-based inks from plates, blocks, palettes, rollers, and brayers.

USE ODORLESS MINERAL SPIRITS (GAMSOL) for final cleaning.

USE DENATURED ALCOHOL for removal of rosin or stop-out, degreasing plates, thinning shellac, final degreasing of palettes, plates, and press beds.

LACQUER THINNER OR ACETONE are sometimes required for special cleaning or transfer techniques. Use only with instructor supervision/permission.

SAFETY SOLVENT IN THE PARTS WASHER (a type of mineral spirits with high flash point) may be used for cleaning plates, tools, and brayers.

LITHOTINE is used only in stone and plate lithography.

CALIFORNIA WASH is used only to clean the letterpress rollers.

### USE RAGS WISELY!

**Re-use rags** that have been partially soiled. Check in the red step cans first.

**Fold rags** into pads, so only part of the surface is soiled at once.

**Dispose used rags** in red step flammable storage cans.

### HAND CLEANING:

**Never use solvents to clean your hands!**

Use **waterless hand cleaner or baby oil** to clean inks from hands before washing with soap and water. Avoid hand cleaners that contain petroleum distillates.

Use a **moisturizer** regularly to replenish natural oils of skin. (Use of hand cleaners and repeated washing of hands can dry out skin.)

## Part 4: Procedures to Reduce Vapors and Mists and Use of Proper Ventilation

Be aware of proper procedures and the ventilation systems.

**Turn on fans and use them.**

### DILUTION VENTILATION

All rooms are equipped with fans for general dilution ventilation to keep air moving and changing. Turn on these fans to reduce fume buildup. They are all on timers and have to be turned on regularly. **Turn fans on!**

### LOCAL VENTILATION

The following areas are equipped with local ventilation for directly removing toxic fumes away from work stations. They are all on timers and have to be turned on regularly. **Turn fans on!**

**SPRAY BOOTH:** Use spray booth for all aerosol enamel and lacquer spray, for lacquer thinner to remove spray paint, and for spray adhesives.

**ACID ROOM:** Acid baths are ventilated 24 hours a day. **Keep acid trays covered when not in use.** Prolonged use of acid room may require extra protection with respirator equipped with special acid-absorbing cartridges. (There are no cartridges that protect from nitric acid vapors.)

**LITHO PROCESSING COUNTER:** Use this area for application of all litho etching solutions and for spit biting intaglio plates.

**EXPOSING ROOM:** Turn on fan at litho plate developing sink when processing and developing plates.

**DARKROOM:** Turn on fan at processing sinks.

**Keep all ink, acid, or solvent containers CLOSED when not in use.**

**Place all soiled rags in red step flammable storage containers.** (Re-use lightly soiled rags!)

## Part 5: Intaglio and Relief Processes

### HANDLE PRESSES WITH CARE

- Presses generate a tremendous amount of pressure!
- **Do not force oversized material through the press!** (Nothing higher than 1/8" on top of plate matrix.)
- Keep hands, long hair, and loose clothing contained and away from rollers and crank handles when operating press.

### KEEP BLANKETS CLEAN

- **Clean your hands or use paper picks** for handling paper or blankets.
- **Always protect blankets from bleeds** with layer of newsprint or plastic between printing paper and sizing catcher.
- **Use gray chip board** instead of blankets for printing relief blocks.
- **You must pay for damaged or inked blankets due to negligence.**

### PARTS WASHER

The parts washer is available for cleaning tools (palette knives and brayers) and for removing grounds from plates. The solvent used is "Safety Solvent," a variety of mineral spirits that has a high flash point and lower toxicity rating than turpentine. The solvent is recycled once a semester by Safety Kleen Corp. However, with prolonged use there is contamination with inks and asphaltum and it should be used as follows:

- **Put on gloves before using parts washer**
- **Keep parts washer closed** when not in use
- **Turn on fan** when using parts washer
- **Turn motor off** when not in use.

### HOT PLATE FOR GROUNDS

The hot plate is a source of combustion! Do not place flammable materials on or near the hotplate. The hot plate for heating grounds and melting rosin should be used as follows:

- **Turn on fan** when using hot plate. (The fan is on a timer.)
- **Turn on and off hot plate using circuit breaker.**
- **Do not use solvents near the hot plate.**
- **Avoid burns by using metal spatulas** to remove hot zinc and copper plates.
- **Leave thermostat at 250 degrees**
  - For heating grounds: 250 degrees
  - For melting rosin: 250 degrees
  - Do not exceed 250 degrees.

### HANDLE SHARP TOOLS APPROPRIATELY!

- **Keep all bleeding material behind the cutting edge.**
- When carving wood or linoleum blocks, keep hands behind tool path and do not brace with your hands. Use bench hook.
- Use etching and wood cutting tools with care. Protect points of needles and sharp tools with a piece of cork.
- Maintain and sharpen tools regularly.
- Tape scraper to protect fingers from sharp edges.

- Edges from filed etching plates can be very sharp. Handle with care.
- Clamp plate to table when filing and wear cloth gloves.
- When engraving, remove burrs promptly, sweep up and discard.

#### PLATE CUTTER

- Mark plate and position against stop bar to left of plate cutter.
- Site mark by looking straight down and matching with cutting edge.
- Protect metal surface from clamp with strip of chipboard.
- Clamp plates before cutting.
- **Keep hands away from cutting edge before using foot pedal!**

## Sharps Disposal

Red sharps disposal containers are located throughout the department. **Dispose of all cutting blades properly using these containers.** Throwing blades in trash barrels is a hazard to our Building Services/Housekeeping personnel.



## Part 6: Lithography

### HANDLING LITHO STONES AND ALUMINUM PLATES:

Litho stones, whenever moved, are a danger. **Use proper techniques to avoid back injury.** Be particularly careful when removing from storage. **All large stones must be moved with Big Joe.** Take care in handling cut aluminum litho plates. Edges are razor sharp and corners should be trimmed in half moon shapes to eliminate danger of skin cuts.

### DUST AND PARTICULATE CONTAMINATES:

**Rosin and talc** dusting of stones should be done only wearing a dust mask and only at the areas designated for processing stones.

**Drawing material for lithography**, Korn's crayons, rubbing crayons, tusche, etc. are a skin irritant and nitrile or latex gloves are recommended when using these materials.

**Xerox toner** used as a drawing material is potentially carcinogenic when particles are inhaled into lungs. Protective particle mask and latex or nitrile gloves must be worn when working with toner and should be done in processing area with ventilation.

### ACIDS

Drops of concentrated acid are used to process stones. In this case, gloves may hamper your control of small dropper bottles, so use bare hands for better feel. However, use extreme caution when handling. Note all precautions in *Part 2: Acid Safety Guidelines* for information about acid and dealing with acid spills.

Nitric acid	TAPEM (Tannic Acid Plate Etch Mix)
Phosphoric acid	Counter-etch solution

### SOLVENTS AND LACQUERS:

See Parts 3 and 4 on solvent handling and ventilation. **Use nitrile gloves for handling most solvents.** Use gloves and pour solvents on red rags or special application materials provided. Dispose of red rags for recycling in red safety cans with lids. Paper or other solvent-saturated materials must be disposed of in specially marked can with yellow lid. Whenever possible, use all solvents at processing counter with local ventilation turned on.

LITHOTINE (VARTINE): Greaseless solvent used to wash out litho stones and plates.

VEGETABLE OIL: Used to clean palettes and rollers (non-leather).

GAMSOL: Final cleaner for palettes and rollers.

LACQUER THINNER: Wash for cleaning plates before application of Lacquer C. Used for transfers.

ACETONE: Final wash for cleaning plates before Lacquer C.

HANCOLITE: Last resort for cleaning plates before Lacquer C. Use with respirator.

RED LACQUER C: Toxic by both inhalation and skin absorption. Base for litho plates applied with Webril Wipes. Use local ventilation at processing counter, respirator, and gloves.

## Part 7: Screenprinting

Emulsion is given out only to students enrolled in screenprinting classes or to those who have paid the lab fee. If you are not in a class and wish to have access, you must see the shop tech to pay the fee and obtain the combination for the emulsion.

### DIRECT EMULSION (COATING A SCREEN)

**Use gloves** when applying direct emulsion to screen. A thin layer of photo-emulsion must be applied to the screen using a scoop coater. Return excess emulsion to the bucket. **Clean the scoop coater when you are done, and replace the emulsion in the locker.**

### DIRECT EMULSION EXPOSING MACHINE (BURNING A SCREEN)

**CAUTION: This machine uses a strong source of ultraviolet rays. Avoid prolonged exposure and do not look directly at UV light.**

- Screen must be dry before exposing.
- Make sure vacuum is tight before turning on the timer switch.
- After exposing, release the vacuum and let the suction dissipate before unlatching.

### IMAGE WASHOUT (WASHING AFTER EXPOSING)

**Wear gloves, apron, goggles and/or a face shield.**

### POWER BLASTER (RECLAIMING A SCREEN)

- **CAUTION: Emulsion cleaning solutions are painfully corrosive.**
- **Wear gloves, apron, goggles and/or a face shield.**
- **Point gun/wand downward to avoid splashing.**
- A respirator may have to be worn for prolonged exposure to spray mists.
- The following chemicals are used in this area:
  - Easi Solv #5: For removing emulsion
  - Easi Solv Gold Stain Remover: For removing dry ink and stains. **Always wear gloves.**

### IN CASE OF ACCIDENT:

**Use eyewash station to flush eyes for 10 minutes, then see a doctor.**

**Flush accidental splashes on skin with water. Wash with soap and water.**

## Part 8: Letterpress

Anyone who uses the letterpress shop must also familiarize his or herself with the Dolphin Press Student Manual, which goes into further detail on the proper care of type, presses, and equipment.

### TYPE

- **Care should be taken with metal type, which contains a mixture of lead, tin, and antimony.** Do not eat or drink in the letterpress shop. Always wash your hands after handling type.
- Job cases are often heavy: use caution when pulling them in and out. Make sure you have a good grip when lifting. If a case is to be pulled out but not removed, also pull the one directly under it out about halfway. This gives it something to rest on. **You don't want to drop a job case.**

### LETTERPRESSES

The Dolphin Press has three flatbed presses and two platen presses. This equipment is old, and care should be taken to not only protect yourself but to prolong its life.

The same guidelines apply with each:

- Tie back hair and avoid loose clothing
- Avoid having tools or hands in the path of the press. The only things acceptable to have on the bed and/or platen are type, furniture, quoins, and chases. Quoin keys, rulers, planers, papers, rags, and other things can get stuck in the machinery or rollers and severely damage the press. Hands should be kept away from anyplace they could get squished.
- Use foot pedal and grippers to hold paper to keep fingers away from the carriage on the flatbed presses; use gauge pins and grippers on the platen press. Set up paper in the platen before pulling the lever.

### SOLVENTS

The following solvents should be used only for the following purposes, and nitrile gloves should be worn when handling. See Part 3 for more information.

USE VEGETABLE OIL for initial cleaning of rollers and palette.

USE ODORLESS MINERAL SPIRITS (GAMSOL) for final cleaning of palette and type.

USE DENATURED ALCOHOL for degreasing palette and Boxcar base and removing Sharpie guidelines from press or base. **Do not ever use alcohol on rollers or on type** – it will dry them out.

USE CALIFORNIA WASH for final cleaning of the rollers. It contains reconditioners for the rubber rollers.

### SLUG CUTTER & MITER

The slug cutter and miter should not be operated by students. Only the shop tech may cut or miter leads and rules.

### PAPER CUTTER AND BOARD SHEARS

The paper cutter is not to be used for bookboard or matboard. These things should be cut on the board shears.

- Always use the foot pedal – it holds paper or board in place and also keeps fingers away from blade
- **The edge of the cutting surface is sharp** in addition to the blade. **Keep your hands to the left of the safety guide on the guillotine and shield on the paper cutter.** Take care when retrieving scraps from the paper cutter.
- Blades should always be kept **down**, not up.

#### GUILLOTINE

The guillotine is for **stacks of paper only** – not bookboard, and not single sheets of paper.

- Adjust the guide and position the text block in back right corner of the table.
- Board should be placed under the text block. Extra paper on top will prevent the first few sheets from getting discolored or bent by the blade, and another piece of board *behind the blade* will prevent the guide from denting the top sheets.
- Turn the top wheel to bring down the top guide that will hold the text block in place.
- Release red safety latch and bring down the lever to cut the paper.