

PBI '93: Adhesives

by Cathleen Baker

Suppliers

[Note: A = first class material; B = use with some reservation; C = not recommended]

Adhesives:

water soluble, water reversible

starch pastes

(A) zin shofu, Japanese precipitated wheat starch

Cat. #2313-015, Conservation Materials Ltd.

(A) Chinese precipitated wheat starch, #1

Colophon Book Arts Supply Inc.

(C) "Yes a stikflat glue"

Cat. #YES-(size), TALAS

(B) Zen Insta Paste, precooked wheat paste

Cat. #A-WHTT, BookMakers

protein glues

(A)* isinglass (Russian glue from swim bladder of sturgeon)

from a friend in Russia, L. Cornelissen & Son, Dr. G. Kremer

*(B-C) if plasticiser added

(A) parchment glue

homemade from parchment scraps

(A) gelatin, photographic grade

Cat. #53104 (Rousselot), Sanofi Bio-Industries

cellulose ethers

(A) methylcellulose, Methocel A 4M

Cat. #64630 (METHOCEL MC (3000-5000 mPs), Fluka Chemical Co.

(A) sodium carboxymethylcellulose, Cellulose Gum CMC 7H

Aqualon CMC 7HF, Aqualon Co.

(A) ethylhydroxyethylcellulose, Ethulose 400

Cat. #2273-050, Conservation Materials Ltd.

polyvinyl pyrrolidone (+ polyalkylene polyamine)

(B) glue sticks, art suppliers, etc.

water soluble, organic solvent reversible

acrylic resin dispersions

(B) Rhoplex AC 33

Cat. #4317-032, Conservation Materials Ltd.

(B) Rhoplex N-580

Cat. #4318-032, Conservation Materials Ltd.

poly (ethylene/vinyl acetate) dispersions

(B) white glues, Jade, PVA emulsions

Colophon White Glue, Cat. #AT1100, Colophon Book Arts Supply

organic solvent soluble, organic solvent reversible

(B) poly (ethylene/vinyl acetate) resin copolymer, BEVA 371 film

1-mil roll 20' x 27", Conservator's Products Co.

(B) dry mounting tissue, Archival Mount™ Plus

Cat. #426-1810, University Products

(C) spray mounting adhesive, 3M Spray Mounting Adhesive

available from art suppliers

(C) rubber cement, Carter's Rubber Cement

available from stationers

Tapes, hinges:

water reversible

(A) acid-free linen tape

Cat. #2351-2355, Light Impressions

(B) Insta-Hinge™

Cat. #2760, Light Impressions

(A) homemade hinges using "The Mix" and Japanese paper

(B) Filmoplast P "archival" tape

Cat. #2830, Light Impressions
organic solvent reversible
(B) 3M #415 double-coated tape
Cat. #05051, Light Impressions

ADDRESSES

Aqualon Co.
2711 Centerville Road
P.O. Box 15417
Wilmington, DE 19850-5417
1-800-345-0447

BookMakers
6001 66th Avenue
Riverdale, MD 20737
301-459-3384

Colophon Book Arts Supply Inc.
3046 Hogum Bay Road NE
Olympia, WA 98506
206-459-2940

Conservation Materials Ltd.
1165 Marietta Way
P.O. Box 2884
Sparks, NV 89431
702-331-0582

Conservator's Products Co.
P.O. Box 411
Chatham, NY 07928
201-927-4855

Fluka Chemical Corp.
980 South Second Street
Ronkonkoma, NY 11779
1-800-458-5287

L. Cornelissen & Son
22, Great Queen Street
Covent Garden,

London WC2B 5BH
United Kingdom

Dr. George Kremer
Dipl.-Chemiker, Farbmühle
D-7971 Aichstetten/Allgäu
Germany
07-565-1011

Light Impressions
439 Monroe Avenue
P.O. Box 940
Rochester, NY 14603-0940
1-800-828-6216

Sanofi Bio-Industries
attn. Jack O'Neil
2350 Kerper Blvd.
P.O. Box 357
Dubuque, IA 52004-0357
215-638-7801 (home office?)

TALAS
213 West 35th Street
New York, NY 10001-1996
212-736-7744

University Products Inc.
517 Main Street
P.O. Box 101
Holyoke, MA 01041-0101
1-800-628-1912

RECIPES

ZIN SHOFU, PRECIPITATED WHEAT STARCH PASTE - 25% V/V (Baker)

1. Equipment: Tefal Cook & Stir™, blender, and airtight container.
2. Set up the Cook & Stir™ by placing the saucepan on the hot plate so that they fit snugly together. Do not plug in yet. Place the mixing blade on the rotating axle and lock it into place with a 1/4 turn to the right.
3. Measure out starch and mix 1:3 v/v with the conditioned water in a beaker, and then pour into the saucepan. Position the thermostat on *** and plug in the unit. Mix for 20 minutes without heat.

4. After mixing, turn on the thermostat to "5". The solution will begin to thicken after about 10 minutes. The paste will continue to thicken for about another minute or so, then will begin to loosen. After a total of 20 minutes cooking (from the start of the cook to the finish), turn the thermostat to *** and pull out the plug.

5. Immediately remove the mixing blade by turning a 1/4 turn to the left and lift up. Remove the saucepan from the hot plate and pour the hot paste into the plastic container. Pour just enough conditioned water on the top of the hot paste to completely cover it. This prevents a skin from forming on the surface as it cools. Clean out the Cook and Stir[™] immediately. Allow the paste to cool completely so that it forms a gel.

6. When the paste is cold, pour off the excess water. Using a hand held mixer or blender, blend the paste until smooth. If necessary, add a little conditioned water to make a smooth paste. You may also sieve the paste smooth. You may wish to cover the paste with water. The paste will keep in the refrigerator for a few days.

CHINESE PRECIPITATED WHEAT STARCH PASTE (Guyot)

1. Mix the starch and water together 1:7 v/v, and cook in a double-boiler until it begins to thicken, stirring constantly. Continue cooking until the mixture goes more transparent, then cook for another 5 minutes.

2. Strain through cheesecloth or some other suitable material and refrigerate. Without a preservative, the paste will keep only a few days.

ISINGLASS (Kronkright)

1. Cut sheets of isinglass into small pieces. In a glass container with a lid, soak in deionized or distilled water for at least one hour or overnight. A stock solution can be made by weighing out 5g isinglass and adding water up to 100ml for a 5% solution.

2. The solution can then be melted by placing the glass container into another, larger glass container or saucepan containing boiling water. Do not continue to heat the water, just let the isinglass solution sit in the hot water, the glue will dissolve. [Note: The temperature of the isinglass solution should not exceed 60°C as above this temperature the glue begins to degrade rapidly and loses its adhesive strength.]

3. Once the isinglass is dissolved it can be cooled and stored in the refrigerator. To use, the solution can be gradually warmed by using the same system from Step 2. Once you notice that the glue no longer gels at room temperature, it has lost its strength.

4. A remoistenable repair tissue can be prepared by heating the isinglass solution, and applying it with a brush to a piece of Japanese paper on a piece of Plexiglas or Mylar. Allow to dry, and peel off the plastic support. Reactivate with moisture, and seal in place with a tacking iron using silicone-coated release paper or Mylar between the repair tissue and the iron.

PARCHMENT GLUE (BPG Paper Conservation Cat.)

1. To prepare a stock solution, cut scraps of parchment or vellum into small pieces (approx. 5-10 mm square).
2. Soak the pieces in cold water (21 grams of scrap to 2.5 liters of water) and cook in a double-boiler at low heat for about 45 minutes. Do not let the mixture boil since impurities may be drawn from the skin.
3. Cool the solution overnight, and resulting stock will be a thick gel. The quantity and stiffness of which will depend on cooking time and parchment:water ration.
4. Gel will keep for a few days in the refrigerator, but vinegar has been traditionally added as a preservative. It can be frozen for long-term storage.
5. To use: enough stock is stirred into warm water (35°-50°C) to create a solution that is slightly tacky. (To test for tackiness: dip thumb and forefinger into solution, press together and let cool; the film should offer minimal resistance to separating fingers.)

GELATIN (Baker)

1. For a stock solution, weigh out 50 grams of gelatin per 950ml of water. Soak the gelatin in the water until all the granules are swollen and soft.
2. Cook in a double-boiler until it reaches a temperature of 130°F or 55°C by which point all of the granules should be melted and in solution.
3. Pour the solution into an air-tight container, cool, and then refrigerate.
4. Dilute as necessary by adding warmed water to the gelled solution and reheating enough to make a workable solution. Do not exceed 130°F.

METHYLCELLULOSE (Baker)

1. Equipment: 1 Pyrex flask, 1 beaker, thermometer, hot plate, whisk, airtight plastic container.
2. Weigh out the correct amount of powder depending on use and concentration; 5% will produce a very thick gel (50g/950ml water).
3. Heat 1/4 of the deionized water in Pyrex flask to between 80-90°C.
4. Pour 3/4 of cold deionized water into a beaker.
5. When the water from step 3. is heated, pour it into a clean storage container. Immediately whisk in the powder. Powder is not suppose to dissolve but will evenly disperse. Whisk until all powder is dispersed.
6. Immediately pour in the cold water whisking constantly in order to evenly wet the powder. As soon as the solution starts to thicken, stop whisking - to continue will cause foaming. Stir occasionally over the next hour.
7. If made with deionized or distilled water, it is not necessary to keep this solution under refrigeration or to use any fungicide. If you want to increase the viscosity of any of the METHOCEL solutions, put them in the refrigerator for at least one hour.

SODIUM CARBOXYMETHYLCELLULOSE (Baker)

1. Equipment: blender, airtight plastic storage container.
2. Fill the clean blender with all of the deionized water.
3. Weigh out the desired amount of powder depending on use and concentration; 5% will produce a very thick gel (50g/950ml water).
4. Place the blender cap on tightly, turn the blender onto the lowest speed. Remove the center cup from the cap, and slowly pour the powder into the vortex.
5. Blend for 15 seconds and pour into clean storage container. Stir occasionally for 1 hour. Let the solution sit for another hour before use.
6. If made with deionized or distilled water, it is not necessary to keep this solution under refrigeration or to use any fungicide.

ETHYLHYDROXYETHYLCELLULOSE (Conservation Materials Cat.)

1. For a stock solution or non-flowing gel, dissolve 80g of Ethulose 400 in 920 ml of water by pouring the powder very slowly and uniformly into the water while stirring moderately. Do not use a blender as this will cause the solution to foam.
2. As soon as the powder is in solution and it begins to thicken, stop stirring, and let the solution stand for a few hours or overnight until all of the Ethulose granules swell and dissolve.
3. Up to an equal amount by volume of pure ethyl alcohol can be added if a less aqueous solution is desired. Denatured alcohols will cause the precipitation of Ethulose into the solution.
4. If kept in an air-tight container, this solution will keep indefinitely.

"THE MIX" (Baker)

1. Put one volume of the undiluted 25% precipitated wheat starch paste into a storage container after blending or sieving to remove all lumps.
2. Using a "folding" action, slowly blend two (or more) volumes of 2.5% Methocel A 4M into the paste. Do not whip the mixture or use a blender as this will make the solution foam considerably.
3. Store in the refrigerator. This mixture should keep for several months without the addition of any fungicide.