CLOTH AND BLOTTER SANDWICHES
Re-sizing with Methyl Cellulose

by T. F. NIELSEN

SIZE: 1. A glutinous or viscid wash applied to paper, parchment, etc., to provide a suitable ground for gilding, painting or other work. 2. A semi-solid glutinous substance, prepared from materials similar to those which furnish glue, and used to mix with colours, to dress cloth or paper, etc. (Shorter Oxford English Dictionary).

If not all book and document-papers stored in archives and libraries and other collections throughout Australia are in need of re-sizing because of physical or chemical deterioration, then most likely all of them will be in need of some kind of sizing treatment in time, especially after any aqueous restoration treatment. Papers are normally resized by furnishing them with a substance which will protect them as a kind of 'film-barrier' and which restores the characteristic crisp handle of the paper.

An ideal sizing agent must fall within certain minimum specifications, which are as follows. The materials must not in any way be a health hazard to the operators. The process must not introduce any acid or other deteriorating materials into the paper being sized. The size must be flexible when dry. The size must not support mould growth or be vulnerable to insect attack. The size should be very easy to apply. Last but not least the size must be completely reversible in cold water. Methyl cellulose appears, after extensive tests and use, to meet all these requirements.

Methyl cellulose is manufactured by Dow Chemicals under the trade name (U.S.A.) Methocel-A15, A4C, A15C, up to A4M, listed in order of increasing viscosity and molecular weight. The formulation of Methocel A4C sizing solution depends on the conditions of the actual paper undergoing treatment and the degree of stiffness one wishes to impart to the paper. Solution concentrations between 0.6% and 0.9% are used, with 0.75% meeting most of the needs. In practice one could prepare a 1% solution and dilute this to deal with all requirements.

Paper is always resized after it has been cleaned, washed, neutralized and buffered. Repairs follow resizing. Some sizing agents can be applied with a wide brush or a latex roller, and in some cases paper would be dipped into the sizing solution. For our present technique, soaking in a bath is by far the safest and most reliable.

Technique

Formula: 0.75% size solution = 75 grams Methocel A4C into 10 litres of water. 1% stock solution = 100 grams Methocel A4C into 10 litres of water.

Supplies and Equipment

Pyrex double boiler; Pyrex 1000 ml beaker; Blotting paper; Insect screen; Photographic developing tray; Plastic Bucket; Hot-plate; Refrigerator; Balance; Stainless steel pot; Polyester cloth.

Preparation of solution (size)

1. Bring 3 litres of distilled water to near boiling point.
2. Place 75 grams of Methocel A4C in the stainless steel pot and slowly stir in the hot water.
3. Add 4 litres of water (room temperature) and mix thoroughly.
4. Place the stock-pot (stainless steel) with the 7 litres of mixture in the refrigerator and leave overnight.
5. Pour the clear size solution into a 10 litre container and add another 3 litres of water. Stir thoroughly.

Soaking technique

1. Pour some of the size solution into one of the developing trays, about three-quarters full.
2. Place each sheet of paper between two sheets of fibreglass screening.
3. Place these sandwiches in the solution tray, one at a time (size in groups of about ten to fifteen sandwiches).
4. Allow sandwiches to soak for about a quarter to half an hour.
5. Remove the entire stack from the size bath. Drain the stack by holding one corner downwards, and place the stack in an empty tray.

Drying technique

1. With the sandwich still intact, remove the top screen and transfer the treated paper to a sheet of polyester cloth (the cloth covers a blotter, and this forms one half of the drying sandwich). Turn the bottom screen over and lay the paper against the cloth and carefully peel or roll the screen away.
2. Cover the wet paper with another sheet of polyester cloth and then with another blotter (this completes the second half of the drying sandwich). Proceed to transfer the next sheet of paper and so build a drying stack.
3. After you have transferred the sheets of treated paper to the cloth and blotter sandwiches, turn the drying stack over and change the blotters. Continue to change the blotters, but allow the paper to remain longer in each set as the drying process progresses.