

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION PRESERVATION PROGRAMS

The information provided below is intended for emergency recovery and response, not general treatment recommendations.

BOUND VOLUMES (BOOKS, PERIODICALS, ALBUMS, PAMPHLETS, ETC.) WITH CLOTH OR PAPER COVERS

Priority Action:

- Freeze or air dry within **48** hours
 - Air, vacuum, or freeze dry (depending on number of volumes)

Recommendations:

- Choice of drying method depends on quantities of wet or damaged volumes
 - If there are only a few (less than 100) thoroughly soaked items, and if the paper is not brittle or coated, they may be air dried
 - If a large number of volumes are thoroughly soaked, if the paper is brittle, or if the paper is coated, the volumes must be frozen and subsequently freeze-dried
- To air dry wet or partially wet books –
 - Stand the book upright, on its head, on absorbent paper
 - Support the book by opening the covers, but not the pages
 - Once pages begin to dry, interleave with paper towels, unprinted newsprint, or thin blotter paper every 10-20 pages
 - Interleaving should extend beyond the edges of the text block, except at the edge on which the volume is standing
 - The sheets should not equal more than one third of the thickness of the volume, so the binding won't be strained
 - Separate the covers from the text block with absorbent paper
 - Open the covers of the book and stand it upright
 - Change interleaving as soon as it becomes wet, alternating the location of the interleaving
 - Change the paper underneath the book and turn the book over
 - Once books feel dry to the touch, remove the interleaves and reshape the bindings
 - Flatten each book under a sheet of plastic or covered board with a weight on top
 - Do not pile books on top of each other – they can distort
 - Keep air moving at all times using fans directed away from the volumes
 - Use dehumidifiers as needed to maintain humidity at or below 50% RH
- To air dry damp books or books with wet edges –
 - Stand books upside down
 - Fan open the pages
 - Support paperbacks and books with damaged covers with bookends or weights
 - Refan the pages every few hours
 - Turn book over to dry tops of pages
 - When book feels dry, flatten under sheet of plastic or covered board with weight on top
 - Keep air moving at all times using fans directed away from the volumes
 - Use dehumidifiers as needed to maintain humidity at or below 50% RH

- Fragile and oversized books should be laid flat with absorbent interleaving placed intermittently between pages
- It is usually safer and more economical to clean dirty or muddy books **after** freezing
 - To clean books before drying, wash **closed** books in tubs of cold running water and dab (do **not** rub) away mud with a sponge.
 - Do not wash books with water soluble media (such as letterpress)
- To pack for freeze drying or vacuum freeze drying -
 - Do not open or close books, do not separate covers
 - Do not try to close or flatten water swollen volumes
 - Wrap a piece of wax paper or a paper towel around the spine and covers of each volume to prevent volumes from sticking
 - Pack spine down in plastic crates or cardboard boxes 1 layer deep to prevent crushing
 - Crates and boxes should be lined with plastic sheeting
 - Pack oversized volumes flat in containers 2-3 books deep
 - Do not stack large books on top of smaller ones
 - After boxes are packed, place on pallets, if available
 - Do not stack boxes on pallets more than three high
 - Ship to a freezer facility as soon as possible
 - Mold will begin to grow after 48 hours if materials are not kept cold

Recommended Supplies:

- Plastic crates or cardboard boxes
- Paper towels
- Freezer or Wax paper
- Sponges
- Cold clean water
- Newsprint
- Blotter paper
- Light weights
- Fans
- Dehumidifiers

Related media:

[Volumes with Leather Bindings](#)
[Volumes with Coated Paper](#)

The information and links provided by NARA are offered as a service and do not imply endorsement of any company, institution, or person. The scale of the emergency and types of materials affected will determine the specific actions or techniques to be taken and whether in house salvage is possible or whether external resources and expertise are necessary.