

Appendix A

Time Capsule Contents Planning Centuries Ahead

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Capturing memories for your descendants requires some thought about the longevity of the artifacts (I've heard that some items like fruit cake and Cheez Whiz, while marvelous testaments to our times, will not survive intact for one hundred years – though some refrigerators may eventually give evidence to the contrary!) Other artifacts, while seemingly stable, will deteriorate over time in less-than-ideal conditions.

Some of the most common agents of deterioration in time capsules, indeed in any environment in which collections of artifacts are stored, are **oxygen, acid and humidity**. All of these, even if present in minute and nearly undetectable amounts, can by themselves cause irreparable damage over the long haul; worse yet if all three are present together. Since these can hardly be eliminated from your time capsule, here are a few preservation hints.

NEWSPAPERS AND PAPERBACK NOVELS are wonderful documents of our culture and current events. However, they are usually printed on the lowest grade of paper. They quickly deteriorate, turning yellow and producing acidic fumes. They will stain and embrittle any other paper with which they have contact.

Several options exist for stabilizing such articles for long-term storage. You can easily and effectively interleave newspaper clippings with acid-free paper or acid-free cardboard. This will at least help to minimize damage to surrounding objects. Another option: photocopy the article onto acid-free paper. Be sure to use a photocopier that produces an image that is slightly raised, indicating that the ink was baked onto the paper. This is the most stable ink. If you are really brave, you can prepare newspapers by washing them with a saturated solution of distilled water and baking soda. This will neutralize their acidity and provide slightly longer life to the clipping. Support the paper on a screen while washing it in a flat tray with the baking soda solution.

A “saturated solution” is a solution in which as much baking soda as possible is dissolved in the water. Such a solution can be prepared as follows: Since the solubility of baking soda increases in warmer water, begin by using distilled water that is slightly above room temperature. While stirring, add baking soda until some remains undissolved in the water. As the solution cools to room temperature, extra baking soda will precipitate out of the solution. Transfer this solution to a separate container, leaving behind the excess baking soda. This solution can then be used to wash any lower quality paper that you want to use in your time capsule.

PLASTICS vary in how they deteriorate. Many have not been around more than fifty years, so their longevity is not known. Some are very unstable, while others seem to last

longer. Nylon, rubber, polyurethane and PVC (polyvinyl chloride) are very unstable. They produce acidic vapors that will deteriorate other materials that are more stable. Polyethylene, polycarbonate, and polystyrene seem to be more stable plastics, although there are some indications that they deteriorate slightly after 10-15 years (some early examples of these materials are turning brittle in museum collections). Some plastics crack and ooze as they age. The "ooze" is often very acidic and ugly. Try to isolate plastic items in a stainless steel tray or with thick acid-free cardboard between them and other time capsule items.

METALS, PARTICULARLY IRON, are sensitive to humidity. If your climate is humid assume that iron objects will rust. Rust will stain and embrittle textiles, paper, leather and other organic materials. Isolate metals from materials that may be damaged by them. This can be done by wrapping them in acid-free paper and separating them with acid-free cardboard. All metals will deteriorate if there are acidic fumes in the air.

Silver and other metals are tarnished by sulphur fumes. Since rubber, wool and any hair items can produce sulphur fumes as they deteriorate, metal objects will be damaged by such items.

PHOTOGRAPHS make a fine addition to any time capsule. When possible, use black and white film for photodocuments. Color photographs and color photocopies are unstable, fading over time. Black and white photographs last a very long time. However, care must be taken when storing photographs together. The gelatin emulsion on a photograph's surface will stick to another surface over time. Place photographs in clear mylar envelopes or interleave prints with mylar. Write on the back of prints with a soft pencil, which lasts longer than any ink.

COMPUTER DISCS, CDs, VIDEO TAPES AND AUDIO TAPES are recorded on plastic film or discs. As noted above, we do not know how some plastics will last over 100 years. As well, the image or sound may be erased or altered if a magnet is stored nearby. Finally, be aware that in a few years the equipment to play these may no longer exist. It is a good idea, therefore, to include written data on how and on what such items are recorded. Include information and instructions pertaining to software, format of equipment, and playback/retrieval systems.

FABRICS can be safely placed in time capsules if they are prepared properly. Polyester is the most stable of fibres, and cotton can act as a humidity buffer, thus making these fabrics good choices. Silk can deteriorate in an oxygen environment and wool can emit sulphur fumes upon deterioration. Thus it is important to wrap these items in sulphur and acid-free archival tissue.

I would strongly discourage foodstuffs. Food will act as an insect attractant, which may lead to an infestation that will damage other stored items. Dry food goods may have insect eggs present. Raw foods and animal parts will rot, forming methane and/or ammonia gases. These may be explosive in a sealed area. Oils and fats yellow and become acidic with time. If you wish to store canned goods, wax seals are better than

rubber and metal lids. Over time, poorly canned goods may be absolutely disgusting. (There are some modern art sculptures using canned fruit that have turned into a nightmare for museum staff trying to preserve them.)

Recycled paper, though environmentally friendly, is not so friendly in a time capsule environment. It often contains harmful elements that will hasten the deterioration of other items in the time capsule.

If you live in an earthquake zone, remember to pad the items in your box with acid-free tissue paper so that no damage occurs if they rattle in an earthquake. Avoid using waste paper, recycled paper, or polystyrene, as all of these may eventually give off harmful gasses.

Finally, the most suitable materials for the construction of the time capsule include stainless steel, aluminum and polypropylene. The container should be rigid and durable. It is best to seal the capsule on a relatively dry day, as excess humidity will hasten content deterioration.

Good luck with preparations for your time capsule! If you have any questions about materials, please call UMCA at 612.870.3120.

Information taken from The Upper Midwest Collections Care NETWORK, Volume 1 #5, Winter Holidays 1995, pp. 1-3.