

## How do I make a time capsule?

### Construction

The container must be strong and airtight to prevent the entry of moisture, dirt and insects. The container should be non-corrodable. By far the best modern material for burial is stainless steel which is relatively cheap, easily fabricated and stable in adverse conditions. The capsule should be welded shut (difficult to open but will provide an excellent seal if the welding is done well). Lead-tin solder should not be used as it will deteriorate in the ground, allowing water into the capsule.

Screw on caps can be used as opposed to welding or alternatively wing nuts can be used to clamp the lid in place. However, screw threads can 'seize' when left under pressure for a long time, making them difficult to unscrew.

Bottles made of stable glass may survive very well, but are prone to being broken due to shifting foundations, frost or carelessness at the time of retrieval.

The use of plastic containers is open to debate. Not much is known about the long term stability of most plastics under burial conditions and it is possible that they may crack under extreme conditions and the seals may also be prone to wear. Large diameter high density polythene pipes have been used. The end caps can be heat sealed or threaded caps sealed with Teflon tape. PVC (polyvinyl chloride) pipe should not be used for time capsules as it will eventually deteriorate and release acid affecting the contents of the capsule. Before burying, the capsule should be wrapped in a waterproof membrane.

### Interior of the capsule

Prior to sealing the capsule it should be packed with a 2.5"-3" layer of ceramic wool fibre, completely surrounding the documents, to protect them from the heat of welding. The environment inside the time capsule should be dry and oxygen free. After welding, oxygen should be removed by flushing the capsule with dry nitrogen through a small hole left for the purpose. The nitrogen will displace the oxygen in the container. The hole should be sealed rapidly. Silica gel or another humidity control system will help control the humidity in the capsule.

### Contents of the capsule

#### Non-paper objects

- Objects which can decompose and thus give off corrosive substances should be avoided. This includes all plant, animal and insect specimens and anything containing batteries.
- Polyvinyl acetate (PVAC) or polyvinyl chloride (PVC) will release acid as they age and should be included only with extreme caution. Objects should be wrapped in acid accepting paper, buffered acid-free tissue or washed cotton. These materials will absorb acid.
- Rubber also deteriorates over time, releasing sulphur. Materials made of rubber should not be used in capsules. Textiles should be clean and insect free. Most textiles survive well in a nitrogen environment.
- All wood, especially oak, gives off acid. It should be kept away from any electronic or metal items before they are inserted into the capsule.
- Metal items should be free of visible corrosion and in sound physical condition. Avoid polishing items before they are inserted into the capsule.
- Electronic devices should have their batteries removed and discarded. Leave instructions on the voltage and current requirements of the device. Solar powered devices are a useful alternative. Paper instruction manuals should be stored away from anything electronic.
- Use archival quality audio and video tape. Bear in mind that the equipment necessary to play back these items may not exist when the capsule is opened.

## **Paper**

- Permanent paper (i.e. paper of an archival quality) should be used. If permanent paper is not used, all documents should be deacidified to help prevent chemical degradation. A professional paper conservator should be employed to do this.
- Newsprint is destroyed rapidly by acid residues left in the paper from the manufacturing process. Newspapers must be deacidified.
- If typed documents are to be included, a pure carbon type writer ribbon should be used. If hand written, archival record ink, not biro, should be used.
- Before being placed in the container, the documents should be dried so as to reduce the relative humidity to 30%.

- Each artefact or set of documents should be placed in an inert polyester bag prior to insertion into the capsule. This will ensure that dissimilar materials are isolated from one another.

## **Photographs**

- Black and white photographs should be used in preference to colour material.
- All colour photographic material has a relatively short life and may be in danger of darkening or fading. Polaroid photographs should not be used even in short life capsules due to their instability.

## **Burying the time capsule**

Place the capsule in a cool, dry location, where it will not be exposed to great fluctuations in temperature. Time capsules are most commonly found buried below ground level in the foundations of buildings. A drained concrete or brick vault lined with fibreglass should be built in order to minimise temperature fluctuations and prevent access of water. The site of a time capsule is often marked in some way. The International Time Capsule Society exists to maintain a register of all known time capsules, to promote research into the history, variety and motivation of time capsule projects, to educate and raise awareness of time capsules among the public and scholarly community and to act as a clearing house for information about time capsules.