

# Historical Archives

## Archives in general

Archives are an accumulation of historical documents collected over the course of the lifetime of an organization.

National archives have the role of collecting, cataloging and securing historical & present day materials within their country. Besides preserving & organizing collections, archivists face the great challenge of deciding which records are assigned a lasting value for research purposes and could contribute to the understanding of a country's history.

Furthermore, archivists transfer the information to more resistant media by digitizing documents, drawings and photographs. This makes it easy for researchers to access conserved items without the risk of damaging the originals.

### Facts & Figures

- The National Archives and Records Administration (NARA) is the record keeper of record for the USA.
- NARA holds 7 billion pages of textual records, 5.5 million maps, 35 million photographs and hundreds of thousands of motion picture films.
- You can visit the NARA building in Washington DC on Constitution Avenue where the original copies of the Declaration of Independence, Constitution, the Bill of Rights and the 1297 Magna Carta can be viewed.



PHOTO BY DAVID SAMUE

United States National Archives Building in Washington D.C.

In spite of all the new media available these days some legacy materials need to be preserved in order to show their uniqueness. The oldest preserved book in the world is possibly an Etruscan script discovered in Bulgaria. It is estimated to be more than 2,600 years old.

Besides all the academic work necessary, it requires great technical effort to create the best possible storage conditions suitable for the form of the objects to be preserved—e.g. papyrus and paper require different temperature and humidity conditions compared with microfilm tapes.

## Why the need to measure relative humidity?

Incorrect temperature and humidity levels can cause damage to documents, books, photographs and drawings. The rate of decay can double with an increase of as little as 5 °C. Warm & damp conditions provide more energy, increasing the speed of decay.

High temperatures can cause document wax seals to soften and even result in the combustion of cellulose nitrate film. At low temperatures, organic and plastic

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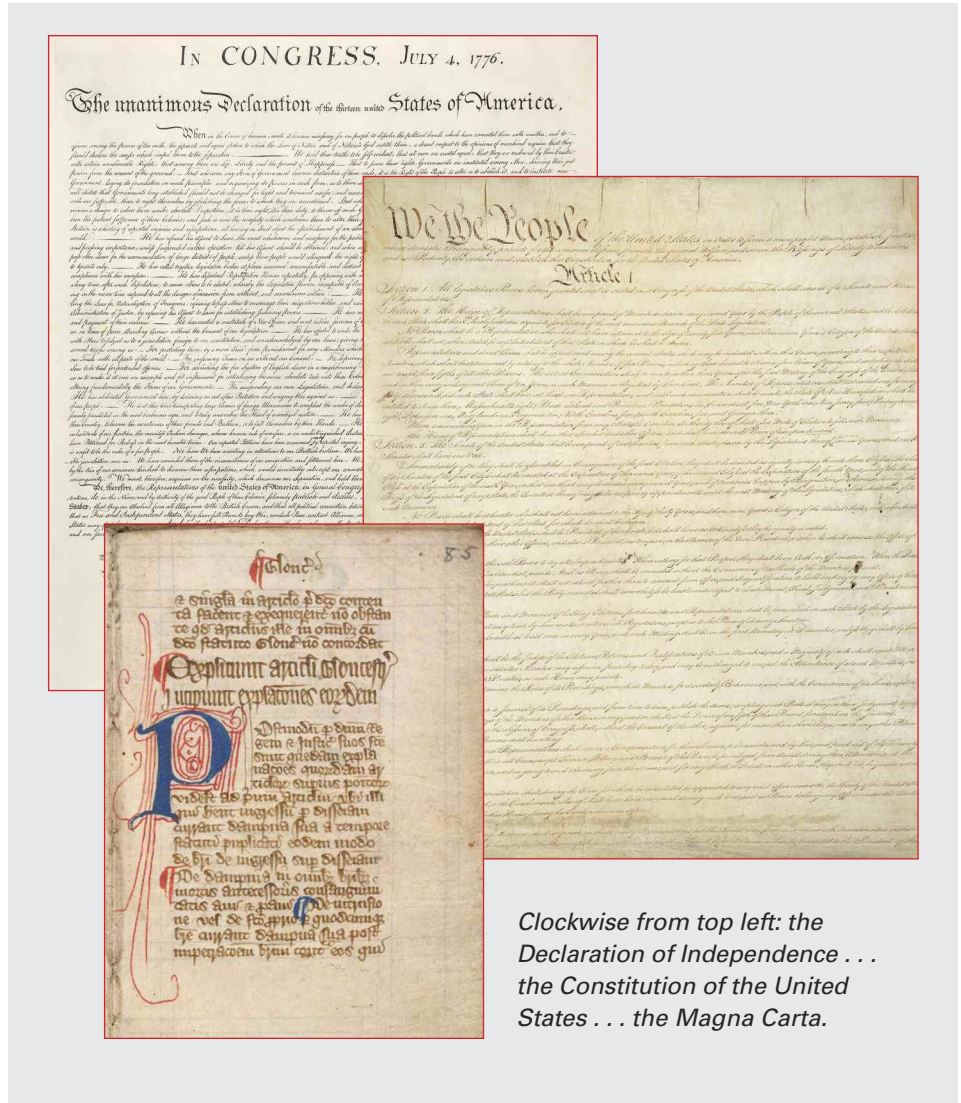
**Why the need to measure relative humidity?** *(continued)*

materials become brittle making them prone to physical damage. One of the most significant consequences of incorrect temperature is the incorrect relative humidity that can result. Temperature has a direct effect on relative humidity. As the temperature rises, relative humidity will decrease and as the temperature drops, relative humidity will increase.

This particular fact of course is the same in museums, but is often much harder to control in archives since proper ventilation is not easy to achieve in between multiple shelves fully loaded with collections. Studies have shown large deviations of temperature and therefore also humidity (RH) within an archive section. In general, it is recommended to keep the temperature between 20-22 °C and humidity between 50-60 % rh in archives where organic material is stored. If the temperature drops below the dew point, condensation will occur causing potential irreparable damage to historic documents and artifacts.

Relative humidity above 65% encourages mold and pest activity, RH below 45 % leads to desiccation, shrinking and cracking of organic materials.

When it comes to maintaining the integrity of historical archives, the main challenge for architects and HVAC engineers is to create the most homogenous and stable storage environment possible.



*Clockwise from top left: the Declaration of Independence . . . the Constitution of the United States . . . the Magna Carta.*

**Environmental factors in archive stores**

- Radiation in the form of light will cause paper to yellow and ink to fade considerably.
- Air pollutants such as dust and chemicals accelerate the degradation of important documents.
- Vibration for example of archive stores caused by vehicular traffic

- or construction work can cause mechanical stress on collections.
- Insect pests can lead to severe damage through bites and deposits.
- Temperature & humidity are the most significant factors that have an impact on archive collections and often interrelate with other environmental factors.