

## Museums, Libraries & Archival Storage



### General Design and Application Considerations:

HVAC systems designed for controlling the environment (temperature, humidity and pollutants) within a museum, a library, or any type of archival facility is much more complex than the system designed simply for maintaining human comfort. This system is designed to control the environment for the preservation of artifacts, books, collections, artwork, etc. These HVAC systems must be operational 24/7 and often require redundancy.

Extremely tight control over all environmental parameters can ensure an object's survival, but at a price few cultural institutions can justify or are willing to pay. Therefore, managing the risks is the objective, not avoiding them all together.



Mold on books

### Environmental Standards or Requirements:

Because of the variety of materials to be maintained, and the costs versus environmental risks deemed acceptable by each facility administrator, there are very few documented design parameters that are accepted by all institutions. Therefore, it is necessary for the project design team to include input from the facility's administrators, collection managers, curators, and conservators to determine the acceptable temperature and humidity parameters for each repository.

Authorities often do not agree fully on the ideal temperature and relative humidity for library and archival materials but are in general agreement. A frequent recommendation is a stable temperature no higher than 70°F and a stable relative humidity between a minimum of 30% and a maximum of 50% (i.e., approximately 33-55 gr/#, or 37-71°Fdp). Research indicates that relative humidity conditions at the lower end of this range are preferable since deterioration then progresses at a slower rate.





film vault

Since most archives store a variety of materials together, each with different optimum storage conditions, it will be impossible to provide ideal conditions for all materials. Archivists usually are familiar with professional and industry standards for their range of record storage media. Minimizing fluctuations within the suggested ranges can be just as important as the design condition itself.

In addition to the above-listed environmental guidelines for general library and archival areas, here are a few more of the general recommended ranges.

Type of Collection	Temperature	Relative Humidity %	gr/#	Fdp
Archives and Libraries Storing Chemically Unstable Conditions	-4	40	2	-20
Microfilm, Silver-Gelatin	65	30	27	33
Polyester Film, B&W	70	40	44	45
Polyester Film, Color	27	30	6	3
Magnetic Media on Polyester Base	46	30	14	18
Acetate Film, Color	27	30	6	3
Acetate Film, B&W	41	30	11	14
Nitrate Film	27	30	6	3
Gramophone Discs	65	35	32	37
Paper	60	45	35	39
Textiles	70	50	55	51
Photographic Plates	48	35	17	23
Photographic Paper Prints, B&W	48	40	20	26
Photographic Paper Prints, Color	38	35	12	15
Metals	Stable Room Temp	<30	<33	<37
Paintings	70	45	49	48
Leather/Parchment/Vellum	55	45	29	34
Wood	65	50	46	46



- These conditions are general recommendations. Contact the factory or your sales representative for project specific consultation.
- Storage condition stability is equally important as the storage condition itself.

For more information  
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6. BS 5454:2000 Recommendations for the storage and exhibition of archival documents
7. ISO 11799:2003 Document storage requirements for archive and library materials
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