



COLLECTIONS CARE TOOLKIT

A Resource Guide for Volunteer Based Museums

Thatcher Wirtz
Thatcher.wirtz@gmail.com

Table of Contents

Table of Contents.....	1
Introduction.....	2
Glossary of Terms.....	3
Chapter 1: Collections Care: The Basics.....	6
Section 1: Handling Objects 101	7
Section 2: What to Wear	8
Section 3: Gloves	9
Section 4: Work Area.....	12
Additional Supplies and Organizing Tips for Collections Work	13
Section 5: Handling Objects	14
Chapter 2: Collections Care 101.....	17
Section 1: Storage	18
Section 2: Light Exposure.....	20
Sections 3: Temperature & Relative Humidity (R.H.).....	25
Temperature.....	26
Relative Humidity.....	28
Chapter 3: Collections Spotlight: Textiles.....	30
Section 1: Textile Storage.....	31
Chapter 4: Intellectual Control.....	34
Section 1: Inventory	35
Section 2: Cataloging.....	37
Chapter 5: References	39
Books	39
Videos	39
Annotations	40

Introduction

Locating information regarding collections care can be daunting for volunteers who do not know where to begin their search. Educational books and other materials are often inaccessible and may not be in a museum's budget. Some organizations require subscriptions to access their collections training information. All volunteers and museum staff working in collections must have proper levels of collections training before working with objects, highlighting the need for accessible educational materials. What if you are the only volunteer at your museum and need some basic collections information? Look no further; this collections care toolkit provides links to free and informative content regarding collections care practices.

The collections toolkit is broken into five chapters, providing users with information on handling and storing objects and the essential tools and equipment needed to complete the task. Although the primary objects in this toolkit are textiles, these resources provide information that can be applied to several types of collections. In addition, the toolkit informs readers about proper climate control and light control and how to inventory and catalog objects.

Glossary of Terms

Accession: One or more objects acquired simultaneously from a sole source and added to the museum's permanent collection.

Accession Number: A specific number assigned to a particular object is used for identification and tracking.

Accessioning: The formal process used to take possession of and record objects as part of a collection.

Acidic: Materials with a pH of seven or lower.

Acid-Free: Materials that are neutral to alkaline and contain a pH level of 6 to 11, such as acid-free paper.

Acquisition(n): "Something acquired by a museum" (Simmons, 2010, p.351).

Acquisition: "The process of obtaining physical custody of an object" (Simmons, 2010, p.351).

Best practices: "Best practices vary between disciplines-the museum field is extremely diverse. Each museum should develop [appropriate policies] for [their] collections and circumstances" (Simmons, 2010, p. 54).

Catalog(n): "The list of the contents of a collection" (Simmons and Kiser, 2020, p.542).

Catalog(v): "To organize the information about accessioned collection components into categories; creation of a record of information specific to an object, assembly, or lot, cross-referencing other records and files" (Simmons, 2010, p.354).

Cataloging: "The process of organizing the information about an accession by creating records of specific information; the creation of a full record, in complete, descriptive detail, of all information about an object, assembly, or lot, cross-referenced to other records and files" (Simmons, 2010, p.354).

Climate Control/Environmental Control: The capability to balance an area's temperature and relative humidity within a building.

Collections Care: The steps taken to protect the well-being of collections objects.

Collections Management: "The activities involved in the administration and stewardship of collections, including, planning, development, care, conservation, and documentation; caring for a collection and making it available for use" (Simmons, 2010, p.355).

Collections Management System (CMS): “A structured, organized collection of information that can be accessed, managed, and edited” (Simmons, 2010, p.355).

Collections Stewardship: “The careful, sound, and responsible management of collections that are entrusted to the museum’s care, including the legal, social, and ethical obligations to provide proper physical storage, management, conservation, and care for the collections and their associated documentation” (Simmons, 2010, p.357).

Condition Report: “An accurate, informative descriptive report of an object’s or document’s state of preservation at a moment in time” (Simmons, 2010, p.356).

Cultural Heritage: “Cultural heritage includes [artifacts], monuments, a group of buildings and sites, museums that have a diversity of values including symbolic, historic, artistic, aesthetic, ethnological or anthropological, scientific and social significance” (Pessoa and Desormeaux, 2009, p.25).

Culturally Sensitive Objects: “An object that requires special handling or uses restrictions because of its importance to a particular culture” (Simmons and Kiser, 2020, p.543).

Cultural Patrimony: “[O]bjects of historical importance to a particular cultural entity” (Simmons, 2010, p.358).

Datalogger: Electronic devices that record temperature and relative humidity or light levels in specific museum spaces.

Deed of Gift: A contract that hands over ownership of an object from donors to the museum.

Inventory(n): “An itemized listing of objects in a collection, often including current location” (Simmons, 2010, p.363).

Inventory(v): “The process of physically locating and recording the presence of objects in a collection” (Simmons, 2010, p.363).

Intellectual Control(n): “The establishment and maintenance of documentation that describes and accommodates access to the informational content of archival resources” (Society of American Archivists, 2022).

Loss: Section or hole caused by damage.

Microenvironment: A small, enclosed area encompassing an object where the climate can be controlled. Microclimates are often found inside archival boxes.

Object(s): Item(s) belonging to a collection.

Provenance: A explanation of the background and history of ownership of an object.

Provenience: The specific location of where an object was dug up.

Registration: “The process of assigning an accessioned object to a unique place in a serial order list of the contents of a collection” (Simmons, 2010, p.366).

Registration number: “A number assigned to an object or specimen in an accession (sometimes used as a synonym for *accession number* or *catalog number*)” (Simmons, 2010, p.367).

Relative Humidity (R.H.): “The amount of moisture in a volume of air relative to the amount of the same volume of air could hold if saturated” (Simmons and Kiser, 2020, p.546).

Temperature (°F/°C): “A degree of hotness or coldness. May be expressed in Centigrade or Fahrenheit scales” (Simmons and Kiser, 2020, p.548).

Storage environment: “The conditions under which collection objects are stored, including temperature, relative humidity, and light exposure” (Simmons and Kiser, 547).

Ultraviolet filter: “A filter that can be placed over [windows], skylights, and artificial sources to remove or reduce ultraviolet radiation” (Simmons and Kiser, 2020, p.548).

Ultraviolet radiation: “Wavelengths between 40nm and 400 nm., invisible to the human eye, but damaging to most collection objects” (Simmons and Kiser, 2020, p.548).

Chapter 1: Collections Care: The Basics

In the museum field, you will often hear the term *best practices* and the importance of upholding these words. This term has multiple definitions and will change depending on the organization. Brent A. Powell states that “best practices should be standards that are based on proven solutions to risk activities in the past and that are still amendable to development and change” (Powell, 2016, p.xii).

Chapter 1 of the toolkit covers *the basics* of collections care. These are the most rudimentary topics one can think of when first starting in the collections field. Topics include things to always keep in mind when touching objects, what to wear when handling objects, the benefits of wearing powder-free nitrile gloves, the ideal workspace, and how to handle objects.

Section 1: Handling Objects 101

This section briefly introduces the reader to handling objects, which is covered in greater detail at the end of Chapter 1. The section aims to get the reader thinking about simple yet significant actions they can take when working with collections.

As elaborated by Legutko-Catlin and Klingler S (2012):

“[Institutions] should take [a] cue from the medical profession. Appropriate behavior should be maintained around objects in a museum. Collections should always be in a safe location. Objects should never be on a cluttered table. Gloves should be worn when handling collections. One should never be rushed when handling objects. These practices go a long way toward keeping artifacts safe” (pp44.).

What to do:

- Wear disposable powder-free nitrile gloves.
- Use two hands when holding an object.
- Always keep food and drinks out of the collections work area.
- Always be extra cautious of your surroundings.

What not to do:

- Do not rush yourself.
- Do not lift or carry objects unless you feel comfortable doing so.

Things to Keep in mind:

- Handling objects may come with some anxiety, which it naturally should. Stay calm and relaxed.
- Deep breaths and critical thinking are your best friends when handling collections objects.

Section 2: What to Wear

This section briefly highlights the importance of what to do and what not to do when selecting appropriate attire for collections work.

What to do:

- Wear gloves.
- Wear powder-free, acid-free nitrile gloves.
- Wear cotton gloves after approval from the curator or collections staff.
- Wear a mask (when appropriate).
- Wear an apron or lab coat (if available/needed).
- Wear safety glasses or goggles when needed.

What not to do:

- Do not wear baggy or loose clothing.
- Do not wear jewelry.
- Do not wear bracelets or watches.
- Do not wear long necklaces or lanyards.
- Do not wear I.D. badges that can snag.
- Do not wear rings.
- Do not wear belt buckles.

Things to keep in mind:

- Wearing appropriate clothing and equipment (gloves, masks, etc.) is necessary when working with objects.
- Acceptable work attire may vary between different museums.

Section 3: Gloves

It is imperative that you know which gloves to wear when handling objects. The general rule is always to wear gloves when handling objects. Choosing to wear powder-free nitrile gloves is best, since cotton gloves can be slippery when handling items such as ceramics. Cotton gloves can be used when powder-free nitrile gloves are unavailable, though they should not replace powder-free nitrile gloves. Powder-free nitrile gloves can be purchased from non-museum retailers; however, purchasing gloves from museum retailers such as Gaylord Archival ensures you get museum-quality gloves. This section also includes an instructional video demonstrating proper glove procedures.

“Gloves should always be worn when handling collections. There are very few exceptions to this rule. It is especially important to wear gloves whenever handling objects with the public present. This sends the right message about collections care.”

(Legutko-Catlin and Klingler, 2012, p.41).

What to do:

- Volunteers and museum staff must wear disposable powder-free nitrile gloves unless otherwise instructed. Always wear a size that fits your hands nicely and tight.
- Wear powder-free nitrile gloves when handling general objects such as textiles, papers, and vessels.

Things to keep in mind:

- Disposable gloves may be an issue for your organization’s budget; however, gloves are necessary. Your organization should have powder-free nitrile gloves in-stock year-round.
- Thicker gloves may decrease hand mobility.
- Powder-free nitrile gloves help to prevent the transfer of oils from hands to objects.

What not to do:

- Do not wear cotton gloves when handling slippery objects such as ceramics or glass.
- Do not wear powdered gloves while handling objects.
- Do not wear gloves that have become torn or soiled.

Check out the following video for an overview of wearing gloves.



Link to Video: Why aren't you wearing gloves? The conservators' guide to object handling in the British Museum

<https://www.youtube.com/watch?v=VAzLunt6Lr0>

Figure 1. The British Museum (2018, May 13). *Why aren't you wearing gloves? The conservators' guide to object handling in the British Museum* [Video]. YouTube.

Credit: The British Museum.

<https://www.youtube.com/watch?v=VAzLunt6Lr0>



How to select Gloves: An Overview for Collections Staff

<https://www.nps.gov/museum/publications/conservation/01-12.pdf>

Figure 2. Gaylord Archival. 3.2 mil Accelerator-Free Nitrile Gloves (200pack).

Credit: Gaylord Archival.

<https://www.gaylord.com/Environmental-Control/Cleaning-Supplies-%26-Equipment/Gloves/3-2-mil-Accelerator-Free-Nitrile-Gloves-%28200-Pack%29/p/HYB09660>



Figure 3. Showa. *Accelerator-Free Disposable 4 mil Nitrile Gloves (100 pack).*

Credit: Gaylord Archival

<https://www.gaylord.com/Preservation/Conservation-Supplies/Gloves/Showa-Accelerator-Free-Disposable-4-mil-Nitrile-Gloves-%28100-Pack%29/p/HYB09369?mpcCode=ZZ>

Links to Gaylord Archival 3.2 mil Accelerator-Free Nitrile Gloves (200 pack) and Showa Accelerator-Free Disposable 4 mil Nitrile Gloves (100 pack)

<https://www.gaylord.com/Environmental-Control/Cleaning-Supplies-%26-Equipment/Gloves/3-2-mil-Accelerator-Free-Nitrile-Gloves-%28200-Pack%29/p/HYB09660>

<https://www.gaylord.com/Preservation/Conservation-Supplies/Gloves/Showa-Accelerator-Free-Disposable-4-mil-Nitrile-Gloves-%28100-Pack%29/p/HYB09369?mpcCode=ZZ>

Section 4: Work Area

Due to limited space, creating an ideal work area in a small museum can be difficult. This section gives you an idea of what a larger collections area looks like and informs you on how to create a safe work area. This section also advises what supplies should be used and which ones to avoid when working in collections.



Figure 4. Figure 6.2 Julianne Snider preparing a report at the Earth and Mineral Sciences Museum & Art Gallery at Penn State. (. n.d.), black and white photograph. From Simmons, J.E., *Things great and small: Collections management policies*. Rowman et Littlefield, 2018, p.137. Credit: Earth and Mineral Sciences & Art Gallery, The Pennsylvania State University.

What not to do:

- Do not use pens to label objects or fill out accession sheets and condition reports.
- Do not directly mark objects with sticky notes.
- Do not stack objects on top of one another
- Do not rest objects on tables with exposed surfaces.

What to do:

- Always cover your work area with acid-free archival paper or polyethylene sheets.
- If possible, try to create a movable workspace. Being able to move your workspace lowers the risk of potential light and environmental damage to objects.
- Always keep food and drink out of the collections work area.

Things to keep in mind:

- Changing the location of a collections workspace frequently may not be practical for small institutions with limited space. Try to implement this procedure as best as possible.
- Keep your work area organized.

Additional Supplies and Organizing Tips for Collections Work

What to use

- Sharpened pencil(s)
- Measuring tape
- Fabric tape measure
- Notepad
- Camera (camera phone okay)

What not to use

- Pens
- Permanent ink
- Pressure sensitive tapes
- Staples or paper clips

Section 5: Handling Objects

Knowing how to handle objects properly is imperative. This section provides information on what to consider when handling objects, examples of damage caused by improper handling, the basic rules for handling objects, and an instructional video demonstrating proper procedures.



Figure 5. Photo 1.8. *Fingerprint permanently etched into silver plating.* (Photo by Ellen Carrlee). (n.d.), color photograph. From Legutko-Catlin, C., and Klinger S. *Stewardship: Collections and Historic Preservation (Small Museum Toolkit)*. Alta Mira Press, 2012, p.42-43. Credit: Carrlee, Legutko-Catlin, C., and Klinger S.

What not to do:

- Do not grab an object by the handle; always grab from the base.
- Do not touch object with dirty hands; always wash your hands with soap and water before putting clean gloves on.

What to do:

- Seek permission from the registrar or collections manager before attempting to handle objects.
- Understand how to move objects properly and conduct the action correctly (See next page).

Things to keep in mind:

- Always remember the level of responsibility you are given when handling objects and the importance of understanding your role as a cultural steward. As cultural stewards, we must fulfill our obligations to the museum's collection (Simmons & Nielson, 2020, p220).

Examples of damage caused to objects through human interaction	
Source of damage	Possible Outcome
Improperly packing objects for transportation	Fragmentation, cracking, splitting
Incorrect handling of objects	Fragmentation, staining, soiling of objects, yellowing
Improper cleaning	Bleeding, damage to the exterior of object
Loss (section or hole caused by damage)	Complete loss of object or areas of object

Table 1. Table 1.5. Effects of Human Interaction. (n.d.). From Legutko-Catlin, C., and Klinger S. *Stewardship: Collections and Historic Preservation (Small Museum Toolkit)*. Alta Mira Press, 2012, p.43. Credit: Legutko-Catlin, C., and Klinger S.

Basic Rules for Handling Objects	
Key Points	Only handle one object at a time. If possible, carry individual parts of an object one at a time.
	Ensure the area you plan to set the object down is clean and clutter-free.
	Avoid causing damage to objects by keeping handling of objects to a minimum.
	When moving, objects move slowly and calmly.
	Handle objects with great care. Treat all objects as though they are fragile and irreplaceable.
	When using a cart to transport several objects, do not overload the cart.
Object Protection	Carefully support the object's weight holding it by its most stable section(s).
	When moving a large or heavy object, never drag or slide; always lift the object.
	Try to avoid walking backward when moving an object. If walking backward is required, ensure you have a second pair of eyes to guide you.
	Always use both hands. Always ask for a second pair of hands when needed.

Table 2. Table 11.8. Guidelines for handling collection objects. (2018). From Simmons, J.E. *Things great and small: Collections management policies*. Rowman et Littlefield, 2018, p.232. Credit: Simmons J.E.

Check out the following video for an overview of how to handle objects.



Link to Video and Transcript: Handling Objects

<https://www.youtube.com/watch?v=fV68mgpdsCs>

Figure 6. Western Australian Museum (2017, Jun 30).
Handling Objects [Video]. YouTube.
<https://www.youtube.com/watch?v=fV68mgpdsCs>

Chapter 2: Collections Care 101

Chapter 2 of this toolkit deals with three key areas when considering how to store and care for collections. These four topics include Storage, Light, Temperature, and Relative Humidity. The last section of chapter 2 covers Temperature and Relative Humidity, providing suggestions for the reader to understand why monitoring temperature and relative humidity levels are so important. The section also offers possible steps to implement practices and policies for your organization.

Section 1: Storage

Knowing how to store an object properly is just as important as knowing how to handle objects properly. Improper storage of objects them at risk of being damaged. This section provides information regarding proper storage procedures, implications of poor storage, and some methods small museums can take to limit further damage to their collections. The section also includes an instructional video demonstrating proper procedures.



Figure 7. *Photo 1.7. Poor storage conditions lead to damage. (Photo by Ellen Carrlee). (n.d), color photograph. From Legutko-Catlin, C., and Klinger S. Stewardship: Collections and Historic Preservation (Small Museum Toolkit). Alta Mira Press, 2012, p.41. Credit: Carrle, Legutko-Catlin, C., and Klinger S.*

What not to do:

- Do not store objects on the ground.
- Do not store objects near water pipes or sewer lines.
- Do not leave storage boxes or shelves unorganized

What to do:

- Learn how to store objects to the best of your organization's capabilities.
- Implement better storage practices within your museum.

Things to keep in mind:

- For objects not stored in archival boxes: Line storage shelves with acid-free cardboard, thin polyethylene, or Tyvek sheets.
- If your museum can not afford to purchase both buffered and unbuffered tissue paper, buy the unbuffered acid-free tissue paper.
- When acid-free tissue is unavailable, undyed or white tissue paper can be used but should be replaced ASAP.
- Storing objects in archival boxes can protect the objects from climate damage (assuming your organization does not store objects on open shelving).



Figure 8. Figure 14. Collection storage in a medium size museum. (2004). From Boylan P.J., and Thevenin, J. *Running a Museum: A Practical Handbook*. International Council of Museums, 2004, p.76.
Credit: Roberts, Andrew.



Figure 9. Gaylord Archival (2022). Archival Storage Box.
<https://www.gaylord.com/Preservation/Archival-Storage-Boxes/Gaylord-Archival%26%23174%3B-E-Flute-Shallow-Lid-Multipurpose-Box-with-DuraShield%26%23153%3B/p/HYB09678>

Additional Links: Storage Boxes

<https://www.gaylord.com/Preservation/Archival-Storage-Boxes/Gaylord-Archival%26%23174%3B-E-Flute-Shallow-Lid-Multipurpose-Box-with-DuraShield%26%23153%3B/p/HYB09678>

“The Overall tidiness is good, there appear to be no water sources overhead, and all but a few very large brass cooking vessels are stored without stacking one on top of another. As with many museums, there is a work space in the collection storage area, which introduces many hazards, such as constant staff traffic, food, drinks, and considerable dust. It is not certain which tables are for work, which are for museum [objects].”

(Roberts Andrew, 2004, p.76)

Check out the following video for an overview of storage basics.



Figure 10. Western Australian Museum (2017, June 30). *Storage Basics* [Video]. YouTube.
<https://www.youtube.com/watch?v=NHEVrR6OcgQ&t=2s>
Credit: Western Australian Museum

Link to Video and Transcript: Storage Basics

<https://manual.museum.wa.gov.au/storage-basics>

Section 2: Light Exposure

Knowing how light exposure affects objects both in collection storage and exhibit spaces is a great skill to have and can make a difference when trying to protect objects from light damage. This section discussed what can happen to objects when over-exposed to light and the potential for long-term wear. While this section provides plenty of resources on light exposure, it does not fully detail how to determine proper light levels. Light levels are standards that should be set by a curator, collections manager, or trained professional.



Figure 11. Photo 1.3. Fading on textile exposed to too much light. (Photo by Scott Carrlee). (n.d), color photograph. From Legutko-Catlin, C., and Klinger S. *Stewardship: Collections and Historic Preservation (Small Museum Toolkit)*. Alta Mira Press, 2012, p.21. Credit: Carrle, Legutko-Catlin, C., and Klinger S.

What not to do:

- Ignore the dangers of sunlight emitting through windows into museum space.
- Use natural sunlight, halogen, or fluorescent lights to light the museum without assuming the risk of damage to objects.
- **Do not leave lights on in collections, storage, and exhibit space when not needed.**

What to do:

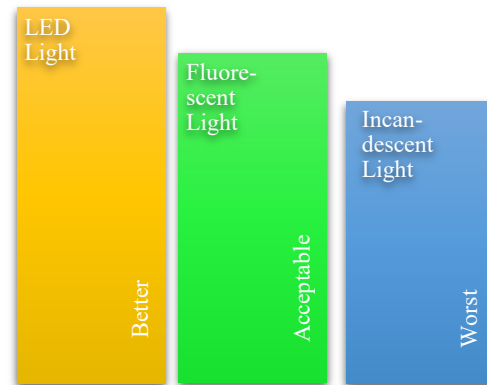
- Keep light exposure to a minimum.
- Use cardboard boxes or curtains to cover as many windows as possible.
- Keep fragile objects and art away from sunlight, halogen, and fluorescent light.
- If windows cannot be covered using boxes or curtains, UV-Filtering Window film or Foil Covered Film is necessary. Over time, natural sunlight will damage objects displayed in areas with exposed windows.

Objects displayed in sunlight should be rotated every 4-6 months

Things to keep in mind:

- Monitoring and recording light intensity levels.
- Sunlight coming in through windows of gallery spaces or entrances and exits can be easily overlooked.
- Too much exposure to natural lights or improper lighting will cause damage to objects, especially objects made of skin.

The graph compares types of light to consider when lighting a museum space.



Traditional light levels:

- 50 lux for works on paper, feathers, textiles, photographs, etc.
- 150 Lux for furniture and oil paintings
- 300 Lux for metal and stone objects.

(Canadian Conservation Institute, 2018).

Choosing the proper lighting for your museum will depend on how the lighting will be used. Seek advice from lighting professionals or the Canadian Conservation Institute.

Link: Agent of Deterioration, Ultraviolet, and Infrared

<https://www.canada.ca/en/conservation-institute/services/agents-deterioration/light.html>

Figure 13 shows U.V. light intensity's effects and the damage it can cause over time.

"It is important to note that the middle section was protected behind a U.V. filter. It shows almost as much fading as the far right section, which was unfiltered daylight."

(Legutko-Catlin and Klinger, 2012, p.21)

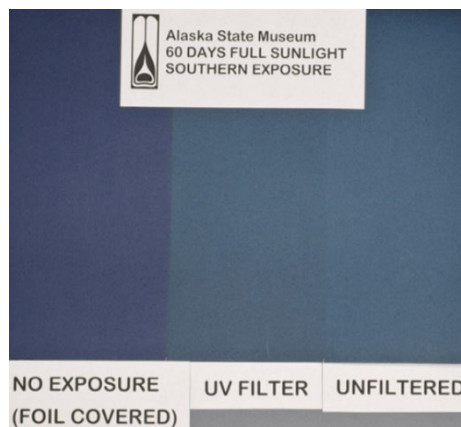


Figure 12. Photo 1.2. After sixty days of exposure to daylight, the dyes on this paper faded (Photo by Sara Boesser). (n.d), color photograph. From Legutko-Catlin, C., and Klinger S. *Stewardship: Collections and Historic Preservation (Small Museum Toolkit)*. Alta Mira Press, 2012, p.21. Credit: Boesser, Legutko-Catlin, C., and Klinger S.

Example of the impact of Ultraviolet (U.V.) light exposure		
Material	Cause	Result
Silk	U.V. light damaging fibers	Weakening of material
Dyed Textiles	U.V. light causes alteration to dyes	Fading
Feathers	U.V. light causes feathers to change color	Fading
Wood and plant material	U.V. light causes damage to compounds within wood and plant material	Darkening
Painted Surfaces	U.V. light causes alteration to the colors of painted surfaces.	Fading
Smoke-tanned hides	U.V. light alters the colors of smoke-tanned hides.	Fading
Photographs	U.V. light causes damage to dyes and fluorescent brightening agents.	Fading, destruction of fluorescent brightening agents
Paper	UV light causes organic polymers to turn acidic	Fading, yellowing, weakening of material

Table 3. Table 1.2. Effects of Light. From Legutko-Catlin, C., and Klinger S. *Stewardship: Collections and Historic Preservation (Small Museum Toolkit)*. Alta Mira Press, 2012, p.21. Credit: Legutko-Catlin, C., and Klinger S.



Purchase a light meter to read light levels and track light intensity.

The Testo Light Meter is an excellent option for small museums.

Link: Testo Pocket Meter

<https://www.gaylord.com/Environmental-Control/Light-Monitors-%26-Meters/Testo-Pocket-Light-Meter/p/T540>

Figure 13. *Gaylord Archival*. Testo Light Meter. Credit: Gaylord Archival. <https://www.gaylord.com/Environmental-Control/Light-Monitors-%26-Meters/Testo-Pocket-Light-Meter/p/T540>

Check out the following video for an overview of light control.

Link to Video and Transcript: Light Control

<https://manual.museum.wa.gov.au/light-control>



Figure 14. Western Australian Museum (2017, Jun 30). *Light Control* [Video]. YouTube. <https://youtu.be/j3lgz8F5OgY>
Credit: Western Australian Museum

Additional Links:

Choosing U.V. Filtering Window Films:

<https://www.nps.gov/museum/publications/conservation/03-10.pdf>

Protection From Light Damage:

<https://www.nedcc.org/free-resources/preservation-leaflets/2.-the-environment/2.4-protection-from-light-damage>

Section 3: Temperature & Relative Humidity (R.H.)

As stewards of museums, we are responsible for recording and addressing damage caused to museum objects. This section covers two of the most critical topics when discussing the preservation of a museum's collection. Understanding how to monitor and control temperature and relative humidity within a museum space will allow you to address possible issues at your museum. If not addressed: inconsistent or rapidly fluctuating temperature and relative humidity levels will cause damage to collections as well as exhibit panels.

Temperature

This section discusses the importance of monitoring temperature levels, the general temperature range to store objects within collections storage, and what can happen to objects when exposed to unacceptable temperature levels.



Figure 15. Scott Carrlee, *Splits in skin-covered kayak caused by unstable climate*, (n.d.). Color photograph, From Legutko-Catlin, C., and Klinger S. *Stewardship: Collections and Historic Preservation (Small Museum Toolkit)*. Alta Mira Press, 2012, p.15. Credit: Carrlee, Legutko-Catlin, C., and Klinger S.

What not to do:

- Do not allow climate levels to fluctuate drastically.
- Do not disregard the importance of environmental monitoring in collections and exhibit spaces.

What to do:

- Keep climate levels as consistent as possible.
- Create a daily data log to track your museum's temperature and relative humidity patterns.

Things to keep in mind:

- Human comfort will significantly determine the desired range of your institution's temperature and relative humidity.
- The general temperature range for all collections storage is 65-75°F with a relative humidity between 45-55% (Simmons and Kiser, 2020, p.326).
- Achieving these standards may not be practical or cost-effective for small museums without an HVAC system.
- Factors such as the material composition of objects and the region and climate of the museum's location will determine appropriate temperature and relative humidity levels.

Additional Link:

Comparing Temperature and Relative Humidity Dataloggers for Museum Monitoring:
<https://www.nps.gov/museum/publications/conservation/03-03.pdf>

Relative Humidity

This section discusses the importance of monitoring relative humidity levels, the general relative humidity range to store objects within collections storage, and what can happen to objects when exposed to unacceptable relative humidity levels. The section also includes an instructional video that gives an overview of relative humidity and the role it plays in museums.

Rule of thumb

A neat rule of thumb for RH values is that within the narrow range of temperature typical for museums (65°–70°), for every 1°F of temperature change there is a corresponding change of 1–2 percent RH (depending on the temperature) in the opposite direction. How can you use this to your advantage? If the RH in your storage area is low in the wintertime, you can raise it by simply lowering the temperature. For example, if your storage room has an RH of 30 percent at a temperature of 70°F and you lower the temperature by 5 degrees to 65°F, the RH will rise to around 37 percent.

Figure 16. Rule of thumb for RH values. Small Museum Toolkit, by Legutko-Catlin C. and Klingler S. (Rowman Altamira, 2012), p.17.

What not to do:

- Do not allow relative humidity to rise above 65%. This will create mold.
- Do not allow for the relative humidity to drop below 20%. Objects can become extremely fragile and run the risk of cracking when handled.

(Simmons and Kiser, 2020, p.326-327)

What to do:

- Purchase data loggers to track relative humidity within exhibit spaces and collections storage areas.
- Avoid significant fluctuation in relative humidity.
- Keep objects in microclimates, i.e., archival boxes, sealed containers, exhibit cases, and cabinets. Include packets of silica gel to absorb moisture.
- Develop a standard for your building's relative humidity, as these standards will vary depending on climate and region.

Things to keep in mind:

- Most cultural materials have a desirable annual range between 40-60% for Relative Humidity with a temperature range between 59-77°F (Powell, 2016, p.162).
- “In a closed system, relative humidity is inversely related to temperature (i.e., when the temperature goes up, the R.H. goes down; when temperature goes down, R.H. goes up)” (NPS Handbook, 4:25)

Check out the following video for an overview of temperature and relative humidity.



Figure 17. Western Australian Museum (2017, Jun 30). *Temperature and Relative Humidity* [Video]. YouTube.

<https://www.youtube.com/watch?v=CCnULkJRM50>

Credit: Western Australian Museum.



Figure 18. Lascar Electronics. *USB Data Logger*. Credit: Gaylord Archival.

<https://www.gaylord.com/Environmental-Control/Temperature-%26-Humidity-Monitors/Lascar-Electronics-USB-Data-Logger-with-LCD-Screen/p/10-11>



Figure 19. Lascar Electronics. *Handheld Datapad*. Credit: Gaylord Archival.

<https://www.gaylord.com/Environmental-Control/Temperature-%26-Humidity-Monitors/Lascar-Electronics-Handheld-Datapad-with-Color-Display/p/10-13>

Link to Video and Transcript: Temperature and Relative Humidity

<https://manual.museum.wa.gov.au/temperature-and-relative-humidity>

Purchasing data loggers such as **the Lascar Electronics USB Datalogger** for your museum is a fantastic way to track the temperature and relative humidity throughout your exhibit and building, especially if your museum can afford to purchase the **Lascar Electronics Handheld Datapad**. The datapad allows users to gather information from multiple data loggers without having to remove the devices from exhibit cases.

Links to Lascar Electronics Datalogger & Datapad:

<https://www.gaylord.com/Environmental-Control/Temperature-%26-Humidity-Monitors/Lascar-Electronics-Handheld-Datapad-with-Color-Display/p/10-13>

<https://www.gaylord.com/Environmental-Control/Temperature-%26-Humidity-Monitors/Lascar-Electronics-USB-Data-Logger-with-LCD-Screen/p/10-11>

Chapter 3: Collections Spotlight: Textiles

What is this chapter about? What is covered in this chapter?

When considering storing textiles, several types of storage methods can be used. These storage methods include flat, rolled, supported, folded, framed, and hanging. Always consult a curator or collections manager before deciding which method works best for the textiles you plan to store. Chapter three highlights the rolled method for storing flat textiles such as tapestries and flags. Users are provided links to informative videos by the Western Australian Museum, the Provincial Archives of Alberta, Canada, and the Minnesota Historical Society, Minnesota, USA.



Figure 20. The Textile Museum. *Robe*, China. Late 19th century. The George Washington University Museum. (Accession Number: 2018.11.1)
Credit Line: Gift of Brigadier General Regan Fuller.
Copyright: Public Domain

Section 1: Textile Storage

Two of the most common storage method for textiles include the folded method and the rolling method. The folded method uses archival materials to store the textiles, including acid-free tissue paper and archival costume boxes. The folded method is recommended for less delicate textiles.

The rolling method is used to store flat textiles compactly, saving storage space. Consider the rolling method when storing flat textiles for long durations of time. Only use this method with flat textiles that are strong enough to withstand a slight strain when rolled. Textiles that can be rolled include flags, rugs, tapestries, pieces of fabric, quilts, ribbons, shawls, and bedspreads (Textile Specialty Group, 2020). The instructional video at the end of this section provides examples of how the folded and rolled methods for storing textiles are carried out.



Figure 21. Renton History Museum. *American Flag being rolled* (n.d.). Renton History Museum, Renton, WA.

What not to do:

- Do not store rolled textile on the floor (Powell, 2016, p.138).
- When rolled into a tube, never hold the tube vertically. Avoiding this will prevent the textile from falling out of the tube (Powell, 2016, p.137).
- When holding the tube, do not place pressure on the center; this will avoid causing damage to the textile (Powell, 2016, p.137).

What to do:

- Ask for assistance when rolling large objects, an extra set of hands can help maintain consistent tension.
- Use acid-free cardboard tubing wrapped in mylar or PVC piping wrapped in cotton.

Things to keep in mind:

- The rolling method is a very feasible form of storage for long textiles.
- Use a large surface such as a table or floor to roll textile. Make sure to cover the surface of the table or floor with plastic or cloth before proceeding.
- Tubing should be at least four inches in diameter to decrease the likelihood of further creasing of the textile. The wider the diameter of the tubing, the less chance you will have of creating curving in the textile when stored.

Check out the following video for an overview of how-to roll textiles.



Link to video: Textile Storage

<https://www.youtube.com/watch?v=6ZvG46jydjE&t=50s>

Figure 22. Western Australian Museum (2017). *Textile storage* [Video]. 2:39. YouTube.
<https://www.youtube.com/watch?v=6ZvG46jydjE&t=50s>



Figure 24 demonstrates how textiles are stored after they are rolled.

Figure 23. Renton History Museum. *Hanging system used to store rolled textiles* (n.d.). Renton History Museum, Renton, WA.



Figure 24. Renton History Museum.
Shattered Silk Garment. Renton
History Museum.
Renton, WA.

Figure 22 is an example of how shattered silk garments can be mistaken for a textile that is in very poor condition. The damage to the fabric may resemble slash marks.

Textiles made from silk contain metals that cause the object to degrade.

When working with textiles made from silk, always contact a conservator for advice. It is highly recommended that only individuals with specific collections training handle these types of textiles.

Chapter 4: Intellectual Control

Chapter 4 focuses on the importance of Intellectual Control and its role for museum staff and volunteers. Intellectual Control is the creation and upkeep of documents that allow easier access to collections and their content (Society of American Archivists, 2022).

As elaborated by Legutko-Catlin and Klingler (2012):

“[W]hile there is no single way to maintain intellectual control over collections, there are standardized procedures for acquiring items, assigning numbers to them, marking objects, and cataloging them. The procedures implement the collection policy. They should be put in writing and reviewed and updated [regularly], preferably every three to five years. A good time to review procedures is when the collections policy is being reviewed” (p.52).

Section 1: Inventory

Conducting annual inventory within your museum is vital to collections care, management, and stewardship standards. While inventorying a museum's collection is a lengthy process, it is necessary for the well-being of the museum. Inventorying a museum's collection allows the organization to take note of any issues that may have become known over the past year. Problems could include missing paperwork, updating condition reports, and accessioning backlogged donations.

"Inventorying museum [objects] is the process of systematically assigning a unique number to every artifact, locating the artifact within the building, and matching the artifact with its historical or legal documentation. Inventory organizes and establishes a collection."

(Tabbert, 2001, p.1).

What to do:

- It is better to finish working with older donations before starting new ones.
- Keep up to date with inventory methods and seek professional training to understand inventory methods better.
- Create a Collections Management Policy that underlines inventory methods and procedures.

What not to do:

- Do not ignore the importance of taking an annual inventory of the objects in your organization's collection.
- Do not ask individuals to work with inventory for more than a few hours at a time. Taking inventory is a repetitive task that eventually becomes boring and causes staff, volunteers, and interns to burn out.

Things to keep in mind:

- Keeping track of inventory is key to collections care.
- Always check with your museum to review the organization's collections management and stewardship standards. This policy establishes when an inventory of the museum's collections takes place (annually/bi-annually/every five years/etc.) and which museum staff (or volunteer) is tasked with knowing the location of every object (Simmons, 2010, pp.232-234).

Additional Links:

National Standards and Best Practices for U.S. Museums

https://artsandmuseums.utah.gov/wp-content/uploads/2021/05/NatlStandards_AAM.pdf

Collection Stewardship Standards:

<https://www.aam-us.org/programs/ethics-standards-and-professional-practices/collections-stewardship-standards/>

Collections Management Standards:

<https://www.aam-us.org/programs/ethics-standards-and-professional-practices/collections-management-policy/>

Inventorying and Cataloging Museum Artifacts:

https://www.obs-traffic.museum/sites/default/files/ressources/files/MNH_Inventorying_Cataloging.pdf

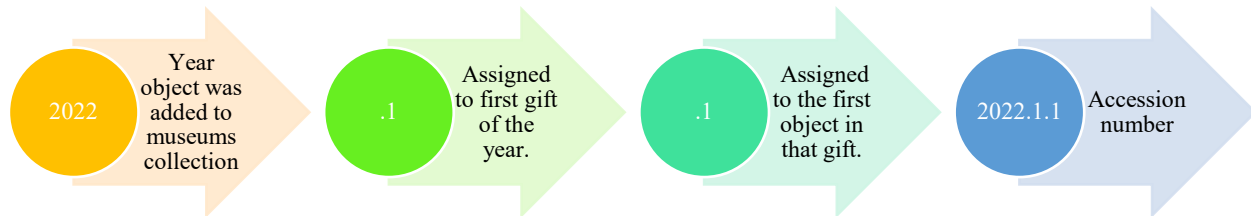
Past Perfect Software YouTube Channel: Videos

<https://www.youtube.com/user/PastPerfectSoftware/videos>

Section 2: Cataloging

Cataloging goes hand in hand with everything we have covered up to this point. Cataloging is simple to learn but is not something you learn overnight. Cataloging should not be conducted by anyone who does not have the proper training to document information/data. If you do not know how to accession an object or fill out a condition report, seek the help of a trained professional. If you are unsure where to look for trained professionals, speak with staff at other local museums or members of your state/region's museum association (i.e., Washington Museum Association). You can also find trained professionals on LinkedIn and the Emerging Museum Professionals Facebook group.

Accession numbers/catalog numbers will vary depending on your organization. However, if your organization is brand new and just starting to catalog donations, it is vital to use and stick with the most up-to-date system, such as 2022.1.1. Accession numbers consist of three different sections of numbers separated by periods.



Stick to a single version of accession numbers when cataloging objects. This will make objects easier to record and track digitally. Older museums may have varying accession/catalog numbers based on the type of organization (ex: archaeology museums vs. art museums), how long an organization has been active, and the collections manager or registrar's level of museum training.

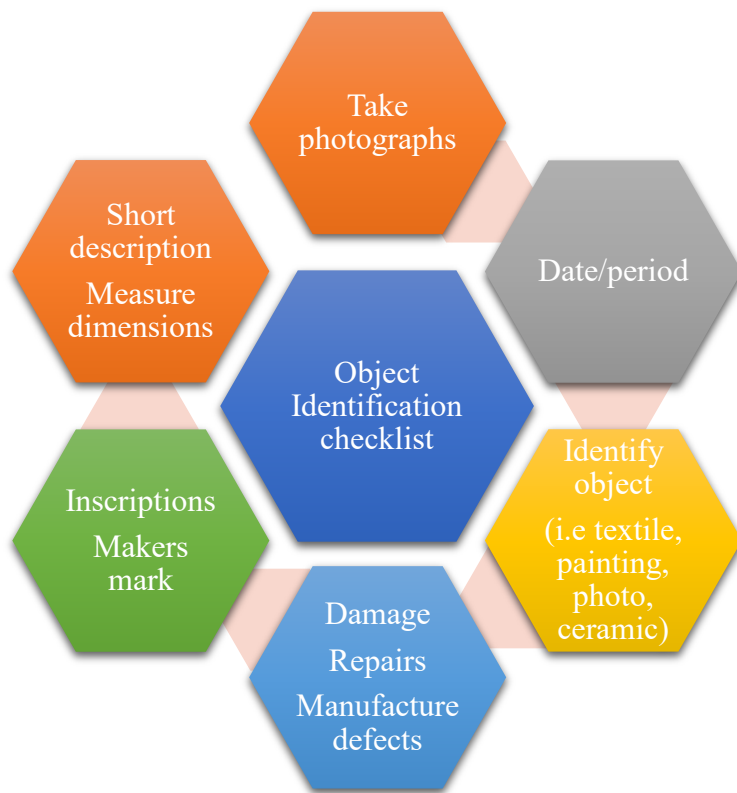


Figure 25. Catalog work sheet/object checklist

What not to do:

- Do not mix up accession numbers. Always double-check all physical and digital documents to confirm the correct accession number, catalog number, and object identification have been recorded correctly.
- Do not rush your work. Take deep breaths and try to remain calm.

What to do:

- Stick to a single version of accession numbers when cataloging objects.
- Keeping your records up to date is one of the most important things you can do when considering collections care. More importantly, keeping multiple formats of all inventory records is also essential.

Things to keep in mind:

- Accession numbers/cataloging I.D. will vary depending on your organization.
- Excel spreadsheets are an excellent way to record and track object information for smaller organizations such as historical houses with a collection size of up to two hundred objects.
- For organizations with a collection size exceeding two hundred objects, a museum software program such as PastPerfect is recommended to store digital records. Museum software is vital for museums with growing collections when tracking and cataloging objects from various collections.

Chapter 5: References

Books

- Legutko-Catlin, C., and Klingler S. (2012). *Stewardship: Collections and Historic Preservation (Small Museum Toolkit)*. Alta Mira Press.
- Malaro, M. C., & DeAngelis, I. (2012). *A legal primer on managing museum collections*. Smithsonian Institution.
- Powell, B. A. (2016). *Collection care: An illustrated handbook for the care and handling of cultural objects*. Rowman et Littlefield.
- Simmons, J. E., & Kiser, T. M. (Eds.). (2020). *MRM6: Museum Registration Methods*. American Alliance of Museums Press.
- Simmons, J. E. (2018). *Things great and small: Collections management policies*. Rowman et Littlefield.

Videos

- The British Museum (2018, May 13). *Why aren't you wearing gloves? The conservators' guide to object handling in the British Museum* [Video]. YouTube. Retrieved June 1, 2022, from <https://www.youtube.com/watch?v=VAzLunt6Lr0>
- Minnesota Historical Society (2009, Dec 7). *(Part 1 of 6) Conservation and Preservation of Heirloom Textiles* [Video]. YouTube. Retrieved May 30, 2022, from <https://www.youtube.com/watch?v=WBo2G18y74A>
- Provincial Archives of Alberta (2021, Jun 30). *Using Archival Tissue Paper for Preservation and Storage* [Video]. YouTube. Retrieved May 10, 2022, from <https://youtu.be/yhIwZmf-UAg>
- Western Australian Museum (2017, Jun 30). *Handling Objects* [Video]. YouTube. Retrieved May 10, 2022, from <https://www.youtube.com/watch?v=fV68mgpdsCs>
- Western Australian Museum (2017, Jun 30). *Light Control* [Video]. YouTube. Retrieved May 10, 2022, from <https://youtu.be/j3lgz8F5OgY>
- Western Australian Museum (2017, Jun 30). *Storage Basics* [Video]. YouTube. Retrieved May 10, 2022, from <https://www.youtube.com/watch?v=NHEVrR6OcgQ&t=2s>

- Western Australian Museum (2017). *Textile storage* [Video]. YouTube. Retrieved May 18, 2022, from <https://manual.museum.wa.gov.au/textile-storage>

Annotations

- Association of Art Museum Directors (n.d.). *Association of Art Museum Directors*. <https://aamd.org/>
- American Alliance of Museums (2020). *Collections Management Policy*. <https://www.aam-us.org/programs/ethics-standards-and-professional-practices/collections-management-policy/>
- American Alliance of Museums (2021). *Collections stewardship standards*. <https://www.aam-us.org/programs/ethics-standards-and-professional-practices/collections-stewardship-standards/>
- American Alliance of Museums (2018). *Core standards for museums*. <https://www.aam-us.org/programs/ethics-standards-and-professional-practices/core-standards-for-museums/>
- American Alliance of Museums (2019). *Direct Care of Collections: Ethics, Guidelines and Recommendations*. https://www.aam-us.org/wp-content/uploads/2018/01/Direct-Care-of-Collections_March-2019.pdf
- American Association for State and Local History (2021). *Standards and Excellence Program for History Organizations (STEPS)*. <https://aaslh.org/professional-development/steps/>
- American Institute for Conservation (AIC) and the Foundation for Advancement in Conservation (FAIC) (2022). *Collections Care*. AIC and FAIC. <https://www.culturalheritage.org/about-us/association>
- Bottoms, W. (2018). *Connecting Object to Story In Historical House Museums*. https://drive.google.com/file/d/17Kjzht3Rs8_N53oWNOJM69G0KMqHtNoW/view
- Boylan, P. J. (Ed.) (2004). *Running a Museum: A Practical Handbook*. ICOM – International Council of Museums. https://icom.museum/wp-content/uploads/2018/07/practical_handbook.pdf
- Brokerhof, A. W. (2007). *Applying the Outcome of Climate Research in Collection Risk Management*, p.116. <https://www.conservationphysics.org/mm/brokerhof/brokerhof.pdf>
- Canadian Conservation Institute (2022). *Care of Objects and Collections*. Government of Canada. <https://www.canada.ca/en/conservation-institute/services/care-objects.html>

- Canadian Conservation Institute (2019). *Rolled Storage for Textiles*. Government of Canada. <https://www.canada.ca/en/conservation-institute/services/conservation-preservation-publications/canadian-conservation-institute-notes/rolled-storage-textiles.html>
- Cato, Paisley S. (2001). *Best Practices – What Does That Imply?* SPNHC Newsletter. https://spnhc.org/wp-content/uploads/2018/11/cato_BP.pdf
- Conn, D. (2012). *2.4 Protection from Light Damage*. Northeast Document Conservation Center. <https://www.nedcc.org/free-resources/preservation-leaflets/2.-the-environment/2.4-protection-from-light-damage>
- Dennis, V. (2016). *Collections Management for an All-Volunteer Organization*. Seattle: University of Washington. <https://www.washington.edu/museology/2016/06/10/collections-management-for-an-all-volunteer-organization/>
- Fifield, B. (2013). *Museum Monday: Get Rid of Those White Cotton Gloves. Time for Nitrile*. The Still Room Blog. <https://thestillroomblog.com/2013/02/25/museum-monday-get-rid-of-those-white-cotton-gloves-time-for-nitrile/>
- Getty (n.d.). *Conservation Institute*. Getty Research Foundation Museum. <https://www.getty.edu/conservation/>
- Getty (n.d.). *The Getty Conservation Institute*. Getty Research Foundation Museum. <https://www.getty.edu/search/publications/>
- Howes, S., & Luke, Jessica J (2019). *Gloves on!: A study of supervisor support for collections volunteers*. The University of Washington. <https://alliance-primo.hosted.exlibrisgroup.com/permalink/f/kjtuig/CP71306368200001451>
- International Museum Academy Myanmar (2019). *Toolkit: Preventive Conservation for Museums*. British Council. https://www.britishcouncil.org.mm/sites/default/files/toolkit_preventive_conservation_for_museums_final_web_english_372020.pdf
- Lascar Electronics (2022). *Handheld DataPad with Color Display*. <https://www.gaylord.com/Environmental-Control/Temperature-%26-Humidity-Monitors/Lascar-Electronics-Handheld-DataPad-with-Color-Display/p/10-13>
- Lascar Electronics (2022). *Temperature and Humidity USB Data Logger*. <https://www.gaylord.com/Environmental-Control/Temperature-%26-Humidity-Monitors/Lascar-Electronics-USB-Data-Logger-with-LCD-Screen/p/10-11>

- The Library of Congress (n.d.). *Collections Care*. Library of Congress.
<https://www.loc.gov/preservation/care/>
- Minnesota Historical Society (2008). *Care of Collections: Practical Guidelines*. Minnesota Historical Society.
<http://www2.mnhs.org/library/findaids/CMTToolkit/CMTToolkit.htm>
- Minnesota Historical Society (n.d.). *Basic Preservation Considerations*. Minnesota Historical Society.
https://www.mnhs.org/preserve/conservation/connectingmn/docs_pdfs/BasicPreservationConsiderations_002.pdf
- National Park Service (n.d.). *Conserve O Grams*. National Park Service Museum Management Program, Washington DC.
https://www.nps.gov/museum/publications/conservedgram/cons_toc.html
- National Park Service (2016). *The Museum Handbook Part 1: Museum Collections*. National Park Service Museum Management Program, Washington DC.
<https://www.nps.gov/museum/publications/MHI/MHI.pdf>
- Ogden, S (1999). 2.1. *Temperature, Relative Humidity, Light, and Air Quality: Guidelines for Preservation*. Northeast Document Conservation Center.
<https://www.nedcc.org/free-resources/preservation-leaflets/2.-the-environment/2.1-temperature,-relative-humidity,-light,-and-air-quality-basic-guidelines-for-preservation>
- Preparation, Art Handling, Collections Care Information Network (2022). *Home*. vBulletin Solutions inc.
<https://www.paccin.org/content.php?s=264e00a6f53210b6b43eda6a65cbdf54>
- Pessoa and Deloumeaux (2009). *The 2009 UNESCO Framework for Cultural Statistics (FCS)*, p25. UNESCO Institute for Statistics.
http://uis.unesco.org/sites/default/files/documents/unesco-framework-for-cultural-statistics-2009-en_0.pdf
- Society of American Archivists (2022). Intellectual Control. In *Dictionary of Archives Terminology*. <https://dictionary.archivists.org/entry/intellectual-control.html>
- Tabbert, M. (2001). *Inventory and Cataloging Museum Artifacts (A Primer)*. Museum of Our National Heritage.
https://www.obstraffic.museum/sites/default/files/ressources/files/MNH_Inventorying_Cataloging.pdf
- Textile Storage Group (2020). Chapter 5. *Storage of Textiles: Issues and Methods Textile Conservators Face When Planning for Textile Storage – Section D. Storage Methods*. AIC Wiki. https://www.conservations-wiki.com/wiki/TSG_Chapter_VIII_Storage_of_Textiles:_Issues_and_Methods_Textile

Conservators Face when Planning for Textile Storage -
Section D. Storage Methods

- The Textile Museum (n.d.). *Storing Textiles*. The George Washington University. <https://museum.gwu.edu/storing-textiles>
- Tekon Electronics (2022). *Temperature and Humidity Monitoring in Museums – A Step in Preventive Conservation*. <https://www.tekonelectronics.com/en/news/tekon-blog/temperature-humidity-monitoring-museums-step-preventive-conservation/>
- Western Australian Museum (n.d.). *Collections Care Manual*. Government of Western Australia. <https://manual.museum.wa.gov.au/>