NATIONAL PARK SERVICE

Conserve O Gram

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How To Select Gloves: An Overview For Collections Staff

Introduction

The surface of human skin is covered with residue including oils, dirt, salts, and moisture. These can damage museum objects by etching, abrasion, and staining. Likewise, the surface of objects can be composed of, or treated with, materials of varying toxicity, such as pesticides. These can render the handling of these objects dangerous to human health and safety. Gloves provide a protective barrier between the object and the person handling objects and prevent the transfer of substances between the hand and the object.

This *Conserve O Gram* provides guidance to collections management staff on how to select gloves for handling different types of materials in museum collections. It does not address interventive conservation work.

Different types of gloves are used in museums including those made of nitrile, vinyl, nylon, cotton, latex, and rubber. Each glove type has different properties that are listed in Table 1, Advantages and Disadvantages of Different Gloves.

In the past, museum professionals commonly wore cotton gloves. However, nitrile gloves are now preferred as they provide superior protection for a broad variety of objects, including metals and others that are highly susceptible to damage from skin contact.

When to Wear Gloves

Wear gloves when handling an object. Gloves protect the object and the handler. In rare circumstances, gloves may not be appropriate. Gloves should not be worn if they can damage the object, or if the object requires a sensitivity of handling that is difficult to achieve while wearing gloves. If gloves aren't worn, make sure that hands are clean and dry, and remain so throughout the handling process. If multiple objects are being handled without gloves, wash hands between handling each object. Consult with a conservator before handling an object without gloves.

Remember, safety first! It is safer for you and the object to wear gloves.

Protecting Against Hazards

Gloves protect the wearer from hazards including chemical agents, mechanical trauma, physical agents, and biological agents.

Chemical agents are the main cause of occupational skin diseases and disorders. These agents are divided into two types: primary irritants and sensitizers. Primary or direct irritants act directly on the skin through chemical reactions. Sensitizers may not cause immediate skin reactions, but repeated exposure can result in allergic reactions.

A worker's skin may be exposed to hazardous chemicals through:

- direct contact with contaminated surfaces
- deposition of aerosols
- immersion
- splashes

Physical agents such as extreme temperatures (hot or cold) and UV/solar radiation.

Mechanical trauma includes friction, pressure, abrasions, lacerations and contusions such as (scrapes, cuts and bruises).

Biological agents include parasites, microorganisms, plants and other animal materials. No single type of gloves provides protection against all potential hand hazards and most commonly available glove materials provide only limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn and whether it can be reused.

Disposable gloves are recommended when in direct contact with chemicals or contaminants. Chemicals will permeate glove material over time so reuse of disposable gloves is discouraged. Non-disposable gloves tend to be thicker and more durable and offer better protection against mechanical trauma but must be cleaned after use if in contact with contaminates.

General Rules to Follow

When selecting and using gloves;

DO

- Use nitrile gloves to handle a diverse array of objects. Nitrile gloves protect against a broad spectrum of chemicals and are generally the gloves of choice for most curatorial work.
- Be aware of glove thickness. Thicker gloves are more protective but do not allow for dexterous movement.
- Use heavy-duty, thicker gloves when handling old chemicals or unidentified liquids.
- Use gloves specific to the hazards encountered. Check the manufacturer's label to see if the selected glove will protect against a specific hazardous material.
- Wear clean gloves of the right size.
- Consult with the affiliated group if there are any cultural sensitivity concerns regarding handling.

DO NOT

- Use dirty or torn gloves as this defeats the purpose of using gloves.
- Use rubber or latex gloves. These can cause allergic reactions and may leave residues that can be deposited on objects.

References

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The National Trust Manual of Housekeeping: The Care of Collections in Historic Houses Open to the Public. Oxford, United Kingdom: Elsevier Ltd., 2006.

Sources

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The series is distributed to all NPS units and is available to non-NPS institutions and interested individuals on line at <http://www.nps.gov/history/museum/publications/conserveogram/cons_toc.html>. For further information and guidance concerning any of the topics or procedures addressed in the series, contact NPS Park Museum Management Program, 1849 C Street NW (2265), Washington, DC 20240; (202) 354-2000.

Table 1. Advantages and Disadvantages of Different Gloves

Glove Type	Material	Advantages	Concerns	Use to Handle
Nitrile	Powder-free nitrile	Disposable Safe for a wide array of objects Do not deposit residue Chemically stable; do not degrade or discolor quickly Provide impermeable barrier between object and human skin Clear indication of tears and breaks Allow a firm grip on smooth or slippery objects Low risk of allergic reaction Best choice for wide spectrum of chemicals with good solvent resistance for many chemicals Good for solvents, oils, greases, hydrocarbons and some acids and bases Good resistance to abrasions	Sulfur used as an accelerant may react and tarnish silver and other highly reactive metals. If this is a concern, use accelerant free nitrile gloves. These are available from the same sources as regular nitrile gloves. Possible allergic reaction to accelerant in nitrile. If this is a concern, use accelerant free gloves. In some cases, may not fit tightly enough to allow fine or detailed work. Avoid contact with ketones, oxidizing acids and organic compounds containing nitrogen.	Archeological collections Bone CDs Complex objects Furniture Gilded or painted wood Glass Horn Illuminated manuscripts Ivory Lacquer Leather Metal Natural history specimens Objects treated with hazardous chemicals Organic materials Paintings and miniatures Paper Photographic materials including film, negatives, slides, and prints Plaster Plastics Stone Textiles Unglazed ceramics Wallpaper Wood
Vinyl	Vinyl	Disposable Provide impermeable barrier between object and human skin Good for acids and bases, oils, fats, peroxides and amines Good resistance to abrasions	Risk of allergic reaction, although less than latex or rubber. Chemically unstable, Degrades and discolors swiftly. This may produce a residue that can be deposited on objects. Avoid contact with ketones and aromatic solvents.	**Vinyl gloves are appropriate to handle the following objects if nitrile gloves are unavailable:** Objects treated with hazardous chemicals

Table 1. Advantages and Disadvantages of Different Gloves (continued)

Glove Type	Material	Advantages	Concerns	Use to Handle
Nylon	White nylon, available with rubber friction dots	Reusable Do not leave finger marks on objects Fit more snugly than cotton gloves	Fabric can deposit lint on objects. Texture can be abrasive. Loose fit may cause handling problems. Must be washed regularly. Avoid gloves with latex friction dots; see latex or rubber and vinyl gloves. Permeable barrier: can wick sweat and oil from the skin and deposit them on the object, does not reliably protect skin from residues on the surface of the object. Not protective against chemical contaminants.	**Nylon gloves are appropriate to handle the following objects If nitrile gloves are unavailable:** Books Paper Photographic materials including film, negatives, slides, and prints CDs Paintings Wallpaper
Cotton	White cotton, available with rubber friction dots	Reusable Do not leave finger marks on objects	Fabric can catch on surfaces, such as splinters in wood or corrosion on iron, risking damage Fabric can leave lint on the object Texture can be abrasive Loose fit may cause handling problems. Must be washed regularly. Permeable barrier can wick sweat and oil from the skin and deposit them on the object, does not reliably protect skin from residues on the surface of the object. Not protective against chemical contaminants. Avoid gloves with friction dots; see latex or rubber and vinyl gloves.	**Cotton gloves are appropriate to handle the following objects if nitrile gloves are unavailable:** Books Paper CDs Paintings Wallpaper
Latex or Rubber	Latex or rubber, available without powder coating	Disposable Impermeable barrier Good solvent resistance for many chemicals Highly elastic, allows for a firm grip on smooth or slippery objects	Risk of allergic reaction. Both latex and rubber are chemically unstable and degrade and discolor swiftly. This may produce a residue that can be deposited on objects. Avoid contact with oils, grease, and other hydrocarbons and organic solvents.	Use for specialized conservation treatments, not for general collections handling. Consult with a conservator prior to handling objects with latex or rubber gloves.