

Glass Beads

Found in such items as dresses, bags, and jewelry

Identification and General Information

Beads of all sorts have been used to beautify objects, with many different types often being used on a single item. Beads vary greatly in size, shape, color, and the material from which they are made. The threading material and the threading method used to attach them are also varied.

Glass beads can be strung in single strands, sewn to items with various stitches, or needle woven like a fabric band. Beads strung on a single strand of threading material are often used as necklaces or bracelets, and a single strand can be sewn to an item, creating elaborate designs. Beads can also be sewn to items individually to form complex patterns. In comparison, needle-woven beads require that the beads be strung in strands and then woven together into a band on a loom. The term *backing material* as used in here refers to the materials to which the beads are attached, such as a shirt, a dress, or a bag. Threading materials commonly include cotton and linen thread as well as sinew.

Glass beads are made of silica and other minerals melted at a high temperature to form a thick, viscous liquid. The liquid is molded into the desired shape and hardens as it cools.

When a colored glass is made, the formulation is modified by adding or subtracting minerals or other substances to produce the desired color. Color can also be added in other ways during the manufacturing process, such as by rolling a molten bead in warm, crushed colored glass and minerals. Sometimes color is applied to the inner core of a glass bead, and it can flake or peel.

Glass beads are made in many sizes and shapes. Commonly, beads are manufactured by winding molten glass around a long iron rod. Different shapes can be created while the bead is

still semisoft. For instance, square and oval beads can be manufactured by pressing the bead while it is still hot against a flat surface. Shapes that are more intricate are manufactured with molds.

Seed beads are made by creating glass tubes or rods. Thin tubes of drawn glass are cut to size, creating very small seed beads. Larger beads, constructed with fatter tubes, are often decorated with chevron linear designs around their sides. Chevron beads are manufactured by applying colored strips of glass to a cone of molten glass. Once the colored strips start to soften, they are combed or dragged through the soft glass and made into a rod, creating a V-shaped chevron design. This rod is then cut into sections to create beads.

Another type of glass beads is mosaic beads, which are constructed with glass rods melted together to create a design. Mosaic beads often look like small clusters of flowers. They are referred to as millefiori, an Italian word meaning “thousands of flowers.”

All of the beads mentioned above are manufactured with a glass oven or kiln. Another method of manufacture, however, requires no oven. Melting thin glass canes in a lamp flame and wrapping the softened glass around a copper tube creates lamp beads. With this method, elaborate beads of varying shapes and sizes can be created at a table without the need for an oven or a long iron rod.

The primary concern with glass beads is their fragility. They can crack, break, or be scratched if the items to which they are attached are not handled with care. Most beads are relatively stable chemically. Some older ones, however, may show visible deterioration. This deterioration is usually the result of improper formulation of the glass, fluctuations of heat and humidity, or a combination of these. In some instances the glass from which the beads were made was unstable; when this glass is subjected to unfavorable environmental conditions, it

deteriorates. The visible deterioration that results is often referred to as glass disease. This type of deterioration is unusual, however. Even so, you should be know the signs of glass disease since some of the beads you see, particularly those on older items, may suffer from it.

Conservators commonly cite five signs of glass disease: broken beads, sweating beads, crusty deposits, crizzling, and damage (bleaching or darkening) to the backing material to which the beads are attached. Glass beads can suffer from more than one of these characteristics at the same time. Many properly made glass beads will never succumb to glass disease. Nevertheless, all items that have glass beads should be stored carefully in conditions that will not encourage glass disease.

The symptoms of glass disease include the following.

Broken beads: The fracturing or complete loss of beads can be the result of either rough handling or an inherently unstable form of glass.

Sweating beads: This is the result of storing unstable glass in a humid environment.

Atmospheric moisture combines with alkali fluxes used in the manufacture of the glass that have migrated to the surface forming a soapy, sticky alkaline solution. This solution forms abrasive and caustic by-products, which will eventually promote the breakdown of the glass beads as well as of the cotton, wool, silk, skin, or hide threading and backing materials.

Crusty deposits: These are another result of unstable glass and high and/or low humidity.

Alkaline products that migrate out of the beads turn into alkaline salts, which deposit on the surface of the bead or on the threading material. This hard alkaline coating makes the beads look as if they are dusty.

Crizzling: This is the result of unstable glass and an excessively dry environment. It is characterized by a fine all-over cracking or fracturing of the beads. The fragmenting of the surface renders transparent beads opaque.

Bleaching or darkening: Bleaching and darkening are the result of unstable glass and high humidity in contact with textiles, skin, or hide. Alkaline products from the beads initiate a reaction with the textile, hide, or leather with which they are in direct contact. Wool and silk textiles will often turn white, while tanned skins will darken.

Basic Care and Storage

Glass beads are fragile and will fracture and break if handled roughly. Take care when moving items to which beads are attached to prevent striking or scraping of the beads.

The strength and stability of the threading material used to string or attach the beads to an item are extremely important. No matter how the beads are attached, the threading material employed, whether cotton, linen, sinew, or fishing line, acts as the connecting element. If the threading material breaks, the beads are either lost, or the band of beads loses structural stability. Stiff and brittle threading materials will fracture with moderate flexing. Moving fragile beaded items with a supportive board will help to prevent damage due to flexing.

High humidity damages glass beads. It promotes sweaty, crusty beads. Also, the threading used to join the beads, whether it is cotton, linen, or sinew, will readily absorb water. Wet threading will promote glass disease within the holes of the beads and cause the breakdown of the threading material. Glass disease will spread in a humid environment through direct contact to other beads.

While glass beads can endure exposure to light, the threading and backing materials cannot. All light will promote a photochemical reaction, breaking down threading and backing

materials at the molecular level. Once this photochemical process has started, it cannot be reversed.

Special Pest Concerns

Mold is not a direct threat to glass beads. However, mold will attack the threading materials of cotton, linen, and sinew, causing them to become discolored and fragile. Damage caused by mold cannot be reversed.

The risk is the same for insect and rodent infestation. While the beads are not attractive to these pests, the threading and backing materials are. Breaks and unstable areas begin when insects or rodents eat the threading material. Highly acidic urine and feces can also weaken threading materials. In addition, insect damage may weaken the backing material to which the beads are sewn, leading to an unstable foundation. As always, routine cleaning and inspection will help prevent this damage.

Routine Handling

Wear gloves so that body oils are not deposited on the surface of glass beads. Oils from your hands promote sweaty beads as well as create a tacky surface to which dust and dirt can stick. When transporting beaded items, use a support board or a sling of washed muslin fabric to carry them. Beaded items are often heavy and need extra support to prevent ripping and tearing of the fragile textiles, skins, or hides to which the beads are attached. Support is especially important when moving needle-woven beaded items, where one break in the connecting material can cause many beads to be lost.

Display Issues

It is important to support items on display at all times. A flat or slanted padded board or a mannequin will support most items well enough. However, the mounts must be able to support the weight of the beads. If possible, avoid vertical hanging. If you cannot, seek guidance from a conservator, because the weight of the beads can cause breaking of the threads and backing materials.

Mounts and Supports

Placing items on storage boards in a drawer or box or on a shelf will facilitate handling. Instead of moving and flexing the item, you can lift and move the board. If the items on storage boards in a drawer tend to shift when you open and close it, you can secure them in place with loosely tied undyed cotton twill tape through slits in the storage board.

When storing beaded items, take care to minimize folds with unbuffered acid-free tissue. Pad out folds and arms of more complex items, like beaded shirts or dresses, with rolled tubes of unbuffered acid-free tissue. Avoid hanging a necklace from its support cords, or a bag from handles or straps. In most cases, these items will not be able to support their own weight.

If you have a large, flat item that needs to be rolled, and it is heavily embellished with beads, be sure that rolling it will not break the threading materials. Protect layers of beads from scratching, catching, or otherwise damaging each other. Separate beads with an interleaving sheet of unbuffered tissue when they lie on top of one another. This is usually necessary when a large item needs to be folded or rolled to fit within a storage container.

Using padded hangers is recommended for only the strongest of clothing. When choosing to hang beaded clothing, examine the shoulders carefully for weakness. Gauge the weight of the garment in your hands. If the shoulders are not strong, a heavily beaded garment will not be able

to support its weight and will distort or tear at the shoulders.

Cleaning and Minor Repairs

Since beads and their threading can be so fragile, prevention is the best solution. Protect items from dust and dirt accumulation by storing and displaying them in protective boxes and cases. The less accumulation of soil that you have, the less handling and abrasion the beads will receive during surface cleaning. Cleaning any composite item, whether a beaded garment or a bag, is difficult. Different cleaning agents, such as solvents, can cause dyes in the backing fabric to bleed. Soap and water can also promote this dye bleeding. Another problem is that even dilute soap solutions can leave a sticky residue behind to which dust, dirt, and sooty particulates will stick like glue.

Vacuuming

Vacuuming with the aid of a soft brush can help remove loose dust and dirt with minimal risk to the item. Prior to any surface cleaning, do a thorough examination for any broken threading material that would allow a bead to fall off during cleaning. To examine the item, it is helpful to place it on a white surface, like a piece of muslin, with a layer of firm padding below. A stark white color will help you see any lost or errant threads or beads. You can then brush the beads gently with a soft brush to help loosen the dirt. This dirt can be picked up with the micro-suction attachment of the vacuum. You do not want to lose a bead into the vacuum. Take care to set the vacuum on a low suction setting. For a delicate or larger item, vacuum through a nonmetal flexible fiberglass screen laid over the item. This screen functions as a protective barrier for beads, threading, and other loose parts of items. Remember to vacuum the surface in a methodical row-by-row manner. This will facilitate cleaning the item overall, so that no one area

is cleaner or brighter than another.

Swabbing with Rubbing Alcohol or Saliva

If the beads are still dirty after vacuuming, use a swab dampened slightly with isopropyl (rubbing) alcohol or your own saliva for a more thorough method of surface cleaning. Be sure to choose a rubbing alcohol that does not contain glycerin, as this will be left behind as a water-attracting residue. Conservators within the museum community commonly use saliva to clean beads because of its mild enzymatic cleaning action. The method of cleaning with saliva is the same as with alcohol. Note that at present opinion varies on what to use for cleaning beads that show signs of glass disease. Probably the safest approach is to consult a conservator for advice. Take care with these treatments to avoid endangering the threading material or the surface of the glass beads themselves. Surface cleaning with a swab may prove too abrasive for the bead itself if it is crizzled or partially broken. For these reasons, it is important to perform the following examination prior to surface cleaning with a swab:

- Examine the threading material for fragility. If the threading material is dark and fractures easily with subtle manipulation, then it is probably too risky to perform aggressive surface cleaning with a swab.
- Spot clean a small test area, and examine the threading material. It is important to prevent any moisture soaking into the threading material. Cotton, linen, and sinew threading will expand as it absorbs moisture. If you see the threading material darkening with moisture, then refrain from cleaning.

Alcohol is good for cleaning glass beads and quickly evaporates. Alcohol is especially helpful with greasy dirt. Before cleaning the beads, moisten a swab with alcohol and then roll the moistened swab on an absorbent piece of washed cotton muslin to remove excess solvent. The

swab should feel slightly damp to the touch. Next, take the slightly dampened swab and spin it gently in one direction over each bead. Do not apply heavy pressure as this could break the threading material. Do not rub the swab back and forth over many beads; this will drive the dirt deeper into the spaces in between the rows. Repeat this procedure using one swab per dip of alcohol, working row by row, top to bottom. A thorough overall cleaning will prevent bright, cleaner spots from occurring.

Loose or Disengaged Beads

If you find any disengaged beads, address the problem immediately before any further damage occurs. Store an item with loose beads in a container to prevent further loss of beads. When examining a fragile beaded item, you may want to do the following:

- Stabilize the item overall by supporting it on a board or table. Any flexing of the item may cause more loose beads to fall off.
- Find the area where the bead or beads were attached. Once you have located the area, examine the threading material until you find the broken one. If the area of bead loss cannot be found, then bag, label, and store the errant beads in the item's file for future examination and possible reattachment.

If you can identify the area from where the beads came, choose a thread and needle that can easily pass through the beads without breaking them. Many conservators use a beading needle size 15 or thinner to pass through glass seed beads. Cotton or cotton-wrapped polyester thread should be used to reattach beads to an item. These threading materials are stable, come in many colors, and are readily available. The thread should be thin enough to pass through without causing stress to the bead or any remaining original threading. Try not to split original threading material. When choosing a thread color, look for something that will be slightly different from

the original thread color. This will help to differentiate what is original from what is a later repair. Also, keep a sample of the new thread in your file, and note its maker and color. Finally, identify the stitches and stringing methods originally used to attach the beads, and use the same stitches during repairs.

Careful, methodical organization will help to simplify the process of sewing disengaged beads back onto an item. Some conservators use a piece of corrugated board with one side peeled off to expose the ribs. Using this board as a tray allows them to line up the beads row by row within the exposed ribs and keep them from rolling away. They can then reattach the disengaged beads in their original position with the appropriate stitching and stringing method.

Bead Replacement

Sometimes items lose beads. When this happens, stabilize the remaining beads in that area of loss by restitching. This way you will prevent further loss from occurring. Some people replace the missing beads with recovered old beads and new beads. It is extremely important to document which beads are original and which are replacements when the item repaired is of great historical value. This documentation will help those who follow to distinguish the original materials from later repairs. Remember to

- document the area of lost beads with photography, diagrams, or photocopies noting the precise location;
- use easily identifiable thread to secure replacement beads, and record the new bead size, its location, and type of stitching used;
- document the thread used by noting the maker and color number and putting a sample in the item's file.

