

# The Care and Preservation of **ACRYLIC PAINTINGS**

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## **Introduction**

Acrylic paintings can be maintained for years of use and enjoyment provided that some basic care and attention is given to their preservation. The conservation staff at The Henry Ford have compiled the information in this fact sheet to help individuals care for their objects and collections. The first step in the care of collections is to understand and minimize or eliminate conditions that can cause damage. The second step is to follow basic guidelines for care, handling and cleaning. The focus of this fact sheet will be on acrylic paints (resins and emulsions) but keep in mind that a spectrum of modern paints were created in the 20<sup>th</sup> century. Conservators are at the early stages of understanding the degradation and properties of these materials which are required to properly care for and preserve these paints. Acrylics were introduced on the art market in the 1940s and 1950s. Magna (an acrylic solution) and Liquitex (an acrylic emulsion) are the most widely known artists' synthetic paints. Compared to oil paints, acrylics have a faster drying time and create a more uniform texture and sheen. Instead of oil binders, additives like surfactants, thickeners, biocides and wetting agents can be added to acrylics to adjust properties. Varnish is often not applied, but some artists do use it as a protective layer on the surface or mixed in with individual pigments. Synthetic varnishes such as Acryloid B-72 are utilized for their non-yellowing and thermoplastic properties and can be brush or spray applied. Due to the relatively short timeline of acrylic paint use, many living artists are available to share their materials and techniques which greatly support a conservator's treatment of these works. Acrylics do not need a primed support in order for the paint to be applied, unlike oil paints. The lack of a white ground layer underneath the paint layers is a good indication of an acrylic painting.

Most fabric paintings are secured to a wooden frame that is commonly referred to as a stretcher or strainer. Stretchers are equipped with expandable corner joints that can be adjusted to insure that the painting remains taught. The joints can be expanded by driving small wooden wedges into the interior corners of the stretcher at the back of the painting. This procedure is commonly referred to as "keying out" a painting. Paintings are also composed on other two- and three-dimensional surfaces such as wood panels, stone, paperboards, composition boards, metal sheets, porcelain, and other fabrics.

Identifying an acrylic painting compared to an oil painting is difficult even though their properties differ immensely. Physical differences can help but additives to both can change their visual results. The most obvious difference is their respective reactions to solvents. Acrylics are very easily dissolved compared to oil paints. More information on caring for oil paintings is in a separate fact sheet.

## **Types of Damage**

The primary cause of damage to acrylic paintings is the storage or display of paintings in inappropriate environments. This includes display or storage in areas where there is excessive exposure to light, high and/or fluctuating temperature and humidity levels, dirt or insects. Damage can also be caused by careless handling and the improper cleaning of paintings.

The most common cause of damage to paintings is careless handling. Physical force from dropping, bumping, puncturing, or vibrations can cause damage to the paint layers and support. It is important to avoid bumping canvas paintings as even the slightest bump can initiate cracking of



the paint surface. While acrylics remain fairly flexible upon drying, they can crack in web-like patterns on non-rigid supports such as canvas. The cracking can increase and spread over time as the canvas moves due to fluctuations in humidity.

Excessively high light levels can cause the darkening and embrittlement of unprimed, raw canvas due to the process of oxidation. Plant fibers like cotton and jute undergo oxidation as they age but high light levels and UV radiation increase the process. High light levels also can cause damage due to excessive heat buildup.

Extremes and fluctuations in temperature and humidity can cause damage to paintings due to the expansion and contraction of the wood and fabric components of the painting. Wood and fabric absorb moisture which causes them to swell on humid days and conversely shrink on dry days. In higher humidity, mold growth is often observed on canvas fibers. Paint, however, is not as resilient and can crack and flake off as a result of expansion and contraction of the underlying wood and fabric structure. These dimensional changes can cause the canvas to become slack and sag during the winter months. Sub-zero temperatures can cause acrylics to become brittle and crack. Aside from the unsightly appearance of dirt on a painting, dirt also serves as a host for mold growth. The absorption of pollutants and moisture onto the surface can obscure the image. Acrylics have soft surfaces that hold onto dust and dirt easily, even incorporate the dirt into the paint film. Close proximity to smoking areas, cooking areas, and fireplaces can deposit nicotine, grease, and soot on the paint surface and canvas support that leaves unsightly stains acidic in nature and weaken the fabric support. Stains often visible on the canvas reverse are due to the wood stretcher/strainer undergoing its own degradation in what is known as "stretcher burn". The acidic byproducts from the wood interact with the cellulose in the canvas fibers and cause permanent browning.

Insects that can cause damage to acrylic paintings include carpet beetles and powder post beetles. Carpet beetles generally subsist on protein-based materials that may be included as a sizing material on canvas paintings. Insects are most often found on the back of the painting between the canvas and stretcher. Holes/losses in the canvas, or the presence of worm-like insects or furry carcasses are an indication of carpet beetle problems. Powder post beetles characteristically bore small holes (approx. 2mm in diameter) into wooden materials. These holes are generally the first visible evidence of powder post beetle infestation. Frass, a substance that looks like saw dust, is also a good indication of an active infestation.

## **Storage**

The proper display and storage of paintings can be achieved by monitoring the environment in various rooms in order to identify the best area for the objects. To avoid damage caused by light, paintings should be displayed in dim or reduced exposure timed areas where no direct sunlight is allowed to fall on them. LED lamps are preferred due to their adjustability in color temperature. The suggested light level for paintings is 150 lux. The use of lights that are positioned close to the paintings such as the commercially available lights (e.g. halogen lights) that are mounted to the frame or directly above it should be avoided. Diffused spotlights should be mounted at least 10 feet from the painting to avoid potentially damaging heat buildup. The display of framed paintings under glass is recommended to prevent the accumulation of dust and dirt and filter out harmful UV radiation.

Paintings should not be keyed out during the winter months when the humidity is low. The increased tension caused by keying out may cause the painting to tear as the wooden stretcher expands during the humid spring and summer months. Acceptable temperature and humidity levels for paintings are as follows, keeping in mind that fluctuations should be kept to a minimum. A relative humidity (RH) of 45-55% is recommended but can be difficult to maintain without a humidifier to help with seasonal fluctuations. A constant temperature of 60-70 degrees F (15-21

degrees C) is recommended, but ideally never above 75 degrees F (25 degrees C). Temperature and humidity sensors are available through the conservation suppliers listed below. While precise control of temperature and humidity is desirable, it is not always practical in homes. Therefore, damage should be minimized by avoiding extremes in temperature and humidity. This can be done by ensuring that paintings are kept away from heat sources such as furnace vents, fireplaces, warm lights and direct sunlight. Extreme fluctuations in temperature of attics should be avoided. Excessive humidity, as can be found in most basements, should also be avoided since it can cause mold growth that can stain the surface of the painting.

Framed paintings should always be stored vertically on sliding racks or slot storage. Unframed paintings can lay flat temporarily but check for sagging of the canvas. When leaning paintings against a wall, place padding and/or blocks beneath to prevent skidding and protect against damage. When stacking a group of paintings, stack by comparable size and orient face-to-face, back-to-back. Place a piece of cardboard that is larger than the paintings between both artifacts. Remove protruding hardware and wiring before storing with other paintings so as not to cause tears and scratches.

When packing paintings for a move, ensure the painting is stable to travel. Wrap the painting with polyethylene (PE) or polypropylene (PP) bags or sheeting and secure with Mylar tape. Framed paintings should be wrapped in clear sheeting and sandwiched between two pieces of cardboard secured with tape. Ensure the corners are protected with extra cardboard sleeves. Some paintings may require a padded crate for safe handling across long distances.

### **Handling**

Prior to moving a painting, be sure to remove all jewelry, belt buckles, etc. so that the painting is not accidentally torn or scratched while being moved. When moving a painting, always be sure to grasp the painting from both vertical sides. Ensure knuckles and fingernails are not pushing into the canvas reverse. Do not wear cotton gloves when handling as getting a proper grip is difficult. Clean hands or nitrile gloves are preferred. Do not hold a painting at the top of the frame or by its hanging wire. If the painting is too large or heavy for one person to move, be sure to have extra hands and a guide to assist. Be aware of surroundings and plan ahead when moving to ensure no furniture with sharp corners could bump or puncture the painting and doors are opened. Never drag the painting. Also be careful to ensure that the picture wire does not puncture the back of the painting during the move. The painting should be securely bracketed into its frame and have sufficiently strong wiring for the weight and size.

### **Cleaning and Care**

In general, the cleaning of paintings should be left in the hands of a trained conservator. However, there are some simple procedures that can be followed to increase the longevity of a painting. Clean, soft brushes and a HEPA-filtered vacuum can be used to remove surface dirt from paintings and frames. Acrylic paints are very sensitive to solvents, including water and any cleaning beyond dry cleaning should be performed by a conservator. Paintings that have loose flaking paint should not be dusted as fragments of paint could be dislodged and swept away. The back of the painting should be kept clean by brushing or vacuuming. To clean the back, the painting should be removed from its picture frame and placed face down on a clean surface. Excessive dirt should be vacuumed using a small low suction nozzle with a brush attachment. Proper framing with a backing board of corrugated sheeting (Coroplast) attached to the verso of the stretcher/strainer will prevent dirt from accumulating behind the painting. Holiday decorating in a manner that will cause damage to paintings should also be avoided. Live greens and berries can stain and damage frames and paintings. They also introduce pests into the environment. If surface dirt cannot be removed by dusting, consult with a conservator for treatment.

Paintings should be routinely taken down and examined for pests. If evidence of infestation is found, the object should be placed in a plastic bag and isolated until it can be examined by a professional conservator.

### **Disaster Response**

In the event of a disaster, due to the many components of a painted artifact, its placement on the salvage priority list may reflect both its stability and its value. It is important that salvage priorities are considered before an emergency occurs. In the event of a fire, at minimum, intense heat can cause blistering of the paint and any varnish or ground layers. Soot and smoke deposits should be removed as soon as possible by a conservator to prevent permanent damage. Water used as a fire suppressant can cause further damage.

Acrylics are soluble in many commonly used solvents, including water in some cases. Moisture build up due to flooding can cause mold contamination. Be sure to wear the proper personal protective equipment when handling moldy paintings before isolating them in a cool, air circulating area to dry out until a conservator can address the damage. Further discussion on salvage and disaster response can be found in The Henry Ford's conservation information sheet on that topic, and in various online resources.

## **SUPPLIERS**

*Framing Materials, Brushes*

- Light Impressions, Inc.

<https://www.lightimpressionsdirect.com>

*Visible Light Meter, UV Light Meter, Humidity Indicators*

- University Products

<https://www.universityproducts.com>

- Talas

<https://www.talasonline.com>

*Packing & Storage Supplies: PP and PE Bags, Mylar Tape, Coroplast (White Corrugated Sheets)*

- Uline

<https://www.uline.com>

- Grainger

<https://www.grainger.com>

*HEPA Filter Vacuum*

- Nilfisk

<https://www.nilfiskcfm.com>

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**To Find a Conservator:**

The American Institute for Conservation

<https://www.culturalheritage.org/about-conservation/find-a-conservator>