



Care of Black-and-White Photographic Glass Plate Negatives

Introduction

Photographic glass plate negatives can be divided into two main categories: those made by the wet collodion process, and the so-called dry plates made by silver gelatin emulsion processes. Although the two types of glass plate negatives may, at first glance, appear to be similar, important differences in their properties determine the recommended procedures for their preservation, handling, and basic cleaning.

Wet collodion glass plate negatives date from approximately the mid-1850s to the 1890s, and have a milky brown appearance. Wet collodion is a solution of cellulose nitrate in a mixture of ether and alcohol. Negatives with a collodion layer were usually varnished after processing. This aged varnish layer contributes significantly to the stability of the image, and often lends a brownish-yellow tone to wet collodion images. The collodion layer is soluble in alcohol and acetone, so these substances cannot be used for cleaning purposes.

By contrast, gelatin dry plates, which began to replace wet collodion plates in the 1880s, have crisp black, grey, or clear tones. Dry plates often exhibit a blue metallic sheen, known as “sulphiding out” or “silvering out,” in high-density areas (that is, in the blackest areas of the negative). This condition is caused by image silver migrating to the surface and forming a thin metallic layer. The gelatin layer on dry plates is impermeable to and insoluble in absolute ethanol.

One characteristic common to wet collodion and silver gelatin dry glass plate negatives is that their supports (i.e. glass plates) are dimensionally stable despite being fragile and brittle.

The general purpose of negatives is to yield good positive prints on paper. Therefore, the condition of a glass plate negative is best determined by making

either a contact print or an enlarged print of it on suitable photographic paper. Experience has shown that a negative that appears damaged or discoloured may produce a near perfect print.

Preservation and Storage

Relative humidity (RH), alone or in combination with aggressive chemical reactants that may be present in the storage environment, is the overriding factor that determines the longevity of glass plate negatives. Fluctuations in RH cause considerable strain on the adhesion of the gelatin to the glass plate as the gelatin expands and contracts, although the glass support is generally not affected.

Recommendations on environmental conditions for the storage of glass plate negatives have been published by the International Organization for Standardization. The acceptable RH level is between 20% and 50%, but preferably below 40%. RH should never exceed 60%. Fluctuating RH must be avoided. The recommended temperature is between 15°C and 25°C, but preferably below 20°C. Reactive chemicals, such as peroxides, hydrogen sulphide, or ozone, should not be present in the environment.

Negatives will not suffer from exposure to light during printing, either through the contact or enlarging process. Nevertheless, negatives should be stored in the dark in filing enclosures or boxes to protect them from prolonged exposure to light.

Keep photographic glass plate negatives in individual filing enclosures made of chemically inert plastics. Uncoated polyethylene or polyester (polyethylene terephthalate, e.g. Melinex 516) are suitable materials for such enclosures. It is imperative that these plastics be uncoated. Do not use plastic materials with applied coatings such as antistatics or lubricants. Chlorinated or nitrated plastic sheeting, such as polyvinyl chloride



(PVC), is also unsuitable. For best protection, encase a glass plate negative in a stable plastic sleeve, then place it in a paper envelope. Store it vertically in a tightly packed manuscript box or in a box equipped with grooves. Use storage boxes made of rigid plastics (e.g. polypropylene, polyethylene, polystyrene) or of metal coated with baked enamel. Do not use storage boxes made of wood or cardboard. Paper envelopes should have a high alpha-cellulose content and a pH around the neutral point (pH 6.5–7.5). Envelopes should be free of sulphur, reactive sizing, metal particles, and lignified fibres, and should pass the photographic activity test as described in ISO 14523:1999 (International Organization for Standardization 1999).

One of the most serious threats to the stability of glass plate negatives is the brittleness of the glass support. If the plate is used frequently for printing, make duplicates. These will yield positive prints that are equivalent in every respect to those made from the original. This process should be carried out by a professional photographer.

Take special care to prevent glass plate negatives made by the wet collodion process from becoming immersed in water, because neither freezing nor freeze-drying will properly restore them if they are damaged. Rigid polyethylene boxes with snap-on lids, or storage boxes enveloped in polyethylene sheeting, offer ideal protection.

Handling

Always wear protective lintless gloves made of nylon, cotton, or latex when handling glass plate negatives. These negatives are susceptible to mechanical damage, such as breakage, fingerprints, and scratches, and should not be left unprotected.

Minimal Cleaning

Remove accumulated dust and surface dirt with a soft brush. Do not treat wet collodion glass plate negatives with organic solvents, such as alcohol. Unlike other types of photographs, neither type of glass plate can be treated in aqueous solutions for refixing, rewashing, or removing chemical stains in the images.

Suppliers

Note: The following information is provided only to assist the reader. Inclusion of a company in this list does not in any way imply endorsement by the Canadian Conservation Institute.

Soft brushes:

local art supply stores

Cotton swabs:

drugstores or grocery stores

General conservation supplies and materials, and prints and storage sleeves:

ARCHIVAL PRODUCTS.ca
Division of B.F.B. Sales Ltd.
2957 Inlake Court
Mississauga ON L5N 2A4
Canada
tel.: 905-858-7888 or 1-800-667-2632
fax: 905-858-8586 or 1-800-616-0342
www.archivalproducts.ca

Carr McLean
461 Horner Avenue
Toronto ON M8W 4X2
Canada
tel.: 416-252-3371 or 1-800-268-2123
fax: 416-252-9203 or 1-800-871-2397
www.carrmclean.ca

Conservation Resources International
5532 Port Royal Road
Springfield VA 22151
USA
tel.: 703-321-7730 or 1-800-634-6932
fax: 703-321-0629
www.conservationresources.com

Talas
20 West 20th Street, 5th Floor
New York NY 10011
USA
tel.: 212-219-0770
fax: 212-219-0735
www.talasonline.com

Woolfitt's Art Enterprises Inc.
Queen Street West
Toronto ON M6J 1J4
Canada
tel.: 1-800-490-3567
www.woolfitts.com

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