

Assembling an Archival Marking Kit for Paleontological Specimens



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A poster presented at the 66th Annual Society of Vertebrate Paleontology Meeting, Oct 2006, Ottawa, Canada

The use of proper application methods and archival materials results in numbers and labels that remain legible, durable, and removable over time. Assembling a marking kit makes archival marking of specimens convenient and more consistent throughout a department or institution.

Abstract

Will the number you put on your specimen, its tag, box or other housing, be legible in one hundred years? Is it rub-proof, water-proof, fade-proof? Will a future worker be able to remove it if necessary? This poster will present a plan for assembling an archival marking kit, adapted for fossils from a similar kit for anthropological objects. Having a well-designed kit saves time and can help improve and standardize marking practices. The proposed kit includes a variety of high quality materials, including India ink, acrylic paint, Acryloid/Paraloid B72 in a convenient nail-polish bottle and also in a tube, Japanese and archival papers, Bristol board and various dispensers, brushes, pens, etc. Possible additions to the kit (such as disposable pens) will be discussed. But even the best materials can fail if not used well. This poster illustrates marking failures and solutions for problematic fossil surfaces (dark, rough, friable, very small or fragile, etc.) and problematic materials such as coated surfaces and plastics. Also included are a discussion of permanence and removability, looking both at the materials included in the kit and others that could be used or have been used in the past.

NON-ARCHIVAL PRODUCTS CAN AGE POORLY

Many commercial products used in the past should be avoided



Nail Polish is usually cellulose nitrate, an unstable resin that can yellow, become brittle and flake off of surfaces.



Correction Fluid can also become brittle and flake off over time.



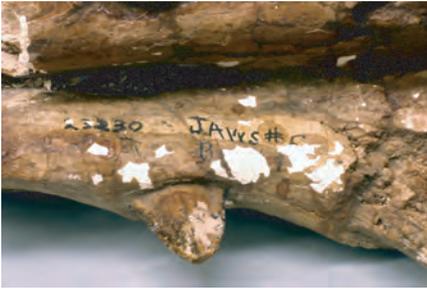
Commercial Pens (Bic, Flair, etc.) often utilize dye-based inks that fade severely. Even so-called "Permanent Markers" (Sharpies, etc) are not lightfast, actually fading rapidly with light exposure. In this case "permanence" refers only to the fact that the markers are waterproof.



Self Adhesive Tape (Scotch, Masking, etc) often ages poorly and falls off.

MARKING PROBLEMS

Improper marking techniques or use of non-archival materials can lead to illegible labels and numbers, resulting in loss of important information. Here are examples of such problems:



A number written on non-archival clear resin that is yellowing and flaking off.



An unstable white basecoat (probably typewriter correction fluid) flaking off.



Ink on a rough, unconsolidated sandy surface rubbing off.



Dye-based ink fading with exposure to light.



Severely darkened resin (shellac) that has almost completely obscured the number written under it.



Ink applied on a handling point with no overcoat that is rubbing off.



A paper label lifting off of an unconsolidated surface.



An incompletely adhered paper label that is peeling off the surface.



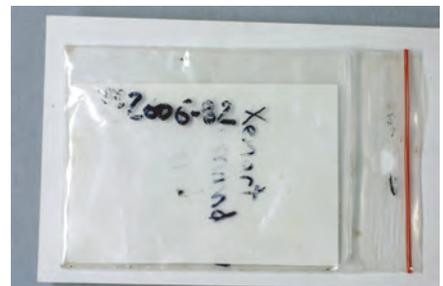
Brittle failure of non-archival paper, adhesive and coating.



Smeared marker on rubber.



Illegible marker ink on foam.



Marker ink rubbing off plastic.

THE MARKING KIT

A marking kit may contain a variety of archival materials, applicators and tools. Here is a list for a sample kit that can be customized for individual collections and users.



Thin Paraloid B-72 in Acetone in a Nail Polish Bottle.

Used as a basecoat and overcoat for ink and paint markings. Paraloid B-72 in acetone 20% w/v (approximately 20g Paraloid B-72 in 80ml acetone) is prepared and placed in a nail polish bottle for easy dispensing. It is a good general-purpose acrylic resin with excellent aging properties.

Black or White Ink

Ink can be used with a quill pen. The black ink must be carbon based, such as Pelikan Drawing Ink #17. The white ink should be titanium oxide based.



Technical pen

Technical pens (rapidographs) such as Koh-I-Noor or Rotring are a convenient way to apply black ink numbers to specimens. 0.30 or 0.35 nibs are good for most marking, while 0.13 is the finest point and is useful when marking very small objects. The pen nibs are fragile and the pens must be carefully handled or they clog or leak.

Crow Quill Pen

Used for applying ink or paint to the undercoat. Some users prefer quill pens to technical pens on some or all surfaces.



Archival pens

Commercial pens are not recommended for applying numbers to specimens as the ink contained in them a mixture of a wide range of ingredients that can be changed by the manufacturer at anytime. Thus the permanence and quality can not be guaranteed. In addition they often do not write well on the resin basecoat and can run when the overcoat is applied. However pigment based pens (such as Pigma) are useful for writing on paper labels and tags. For labeling plastic bags and containers Identi-pens are recommended as they are fade-proof and more rub resistant than other permanent markers.



A variety of useful tools

Brushes for applying ink or white paint, small scissors and tweezers.



Marking Kit

A small plastic container easily holds materials for a complete marking kit.



White acrylic paint

Used to mark dark specimens. The paint must be composed of a stable pigment (titanium oxide). Golden Fluid Acrylics are a perfect consistency for application with brush or quill pen and are supplied in small handy dropper bottles



Black ink for technical pens

The ink must be pigment based (carbon black) as this is light stable while dyes used in some inks are not. Koh-I-Noor 3080f Universal Black Ink is one example.



Technical Pen Cleaning Solution

The pen point should be dipped in the solution after each use and capped without wiping to prevent clogging of the delicate nibs.

MARKING SOLUTIONS

Archival marks are well adhered and durable. They are fade-proof, rub-proof and waterproof. It is also important that they be removable without damage to the specimen. Reasons for removal may include correcting catalog errors, molding, photography, analysis, or exhibition.

The Standard Method Carbon Based Ink Between Layers of Paraloid B-72.

The Basecoat: A layer of thin Paraloid B-72 in acetone seals and isolates the surface.



The basecoat provides a smooth, even surface for the number or label. It also allows the number to be easily removed from the specimen if necessary in the future.

Keep in mind that many surfaces must be properly consolidated prior to application of marks. If the surface is very friable or powdery the basecoat of Paraloid B-72 may not be sufficient to ensure durability.

The B-72 basecoat may sometimes bubble upon evaporation of the acetone. This can be remedied by adding some ethanol to slow down the evaporation rate. Note that the ethanol/acetone mixture may sometimes smear ink if used as an overcoat.

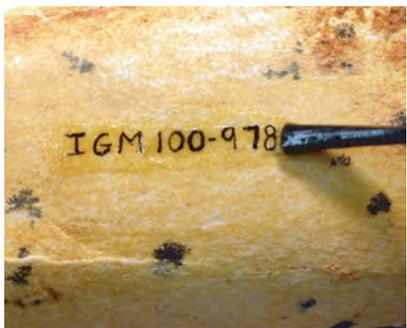
The Ink: Carbon-based ink is lightfast.



The basecoat should be allowed to dry completely before applying the ink.

Carbon black ink can be applied with a technical pen or crow quill pen. These inks adhere well to the basecoat. Many commercial pens are dye-based and should not be used as the numbers may fade over time. Others, such as Pigma pens, are more lightfast but may not adhere well to the basecoat or run when the overcoat is applied.

The Overcoat: A layer of thin Paraloid B-72 encapsulates the ink, making the mark more durable.



The ink should be allowed to dry thoroughly before application of the overcoat.

Avoid disturbing the ink by flowing on the overcoat with a heavily loaded brush without the bristles touching the surface.

Methods for Dark Surfaces

White paint or ink with a stable pigment (titanium oxide) can be used in two ways to mark a dark surface.



White paint or ink can be applied with a crow quill pen or fine brush to a basecoat of B-72, and then overcoated with B-72.



A brushed on patch of white acrylic paint can be placed on top of the B-72 basecoat, then marked with carbon based ink and overcoated with B-72.

Rough and Uneven Surfaces

Some surfaces, such as coarse matrix, can be too rough to mark legibly with a pen or brush.



Paper labels can be useful in these cases. However, it should be noted that ink labels are always preferable, as there is less chance of separation and loss of information. If a paper label is used, the paper and ink used should be archival, and the label must be well adhered and completely saturated with Paraloid B-72 to prevent detachment. Paper labels should not be applied to powdery or friable surfaces that have not been consolidated, as they will peel off over time.

Materials for making paper labels can be included in the marking kit for easy access.

Papers

A variety of archival papers and boards, including Japanese rice paper, precut archival paper strips, and Bristol Board strips can be used for labels on specimens, casts, molds and storage housings.

Thick Paraloid B-72 in acetone in a tube.

Used to adhere paper labels to specimens, boxes, casts, jackets, etc. A concentrated solution of approximately 50% B-72 in acetone w/w is prepared and placed into an empty aluminum tube for easy use.



Torn edges grab better than cut edges. Japanese paper is especially flexible, allowing it to conform to irregular surfaces.

The paper label can be applied with thick Paraloid B-72 and should be pressed well into the surface.



The label should be saturated with resin by dipping it in the solution or by coating it well after placement.

Marking Plastics



Silicone rubber can be marked by "tattooing" with a sharp point and rubbing India ink into the marks.



Casts can be marked in several ways including paper labels, black ink between layers of B-72 and paper tags.



Plastic bags and boxes can be marked with an Identipen which is lightfast and adheres well to plastic. A loose paper label inside can be used in addition.



Foam can be marked by inserting a stiff, folded Bristol board label into slits.

This paper label is adhered face-out to the inside of the lid with B-72. If acetone causes the plastic to cloud, alcohol or Jade glue can be used.



SUPPLIERS AND RECIPES

Paraloid B-72 (formerly Acryloid B-72 in the US) is an ethyl methacrylate co-polymer. It is sold as solid beads by conservation suppliers, such as Conservation Resources International - <http://www.conservationresources.com>, 800-634-6932 or Talas - <http://talasonline.com>, 212-219-0770. The beads dissolve in a variety of solvents including acetone and ethanol. For a discussion of how to prepare it in tubes see the Koob article referenced below.

Empty Nail Polish Bottles may be purchased from beauty suppliers or, more simply, a bottle of clear nail polish can be emptied, rinsed well with acetone and filled with a thin solution of Paraloid B-72.

Empty Aluminum Tubes. Available from Conservation Resources International - <http://www.conservationresources.com>, 800-634-6932. Item #TUB-1, sold in boxes of 10 tubes.

All of the other pens, ink, paint, tools and papers listed are available from art or office supply stores.

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"Appendix J: Marking" in The National Park Service Museum Handbook, Part II: Museum Records (2000) <http://www.cr.nps.gov/museum/publications/MHII/mh2appj.pdf>

ACKNOWLEDGEMENTS

The authors wish to thank Ana Balancel, Cornelia Blik, Bob Evander, John Flynn, Bushra Hussaini, Carl Mehling, Chris Norris, Ivy Rutzky and Linda Scalborn of the Division of Paleontology, AMNH; Lisa Elkin, Conservator of Natural Sciences Collections, AMNH; Greg Brown of Vertebrate Paleontology, University of Nebraska State Museum; and Rachel Perkins-Arenstein, Conservator in Private Practice, who all helped us adapt, develop and test the marking kit or offered advice during the compilation of this poster. Also many thanks to George Scott of Scott & Nix.

Parts of this material contributed by Marilyn Fox are based on work supported by the National Science Foundation under Grant No. 0346678. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.