

# Photo Books: A New Take on an Old Preservation Technology

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## Abstract

*The purpose of this paper is to clarify the differences, which exist between the possibilities of binding with the purpose to come to recommendations for the best possible books with good usability and durability for the libraries, the archives and the public.*

## Introduction

The market for photo books, that is, bound books printed from digital files of consumer images, is a new and growing market segment in the photography industry. Binding methods for photo books has an impact on long term preservation and consumer usage habits and is now being considered by the International Standards Organization, ISO. The possibilities of binding depend mainly from three different factors.

The **first factor** is the quantities of books to bind.

The **second factor** is the possibility of controlling the four elements of the binding. The *first element* of the binding is the type of paper to bind in the bundle. The paper may be offset paper, thick silver halide, thin silver halide paper, inkjet photo-paper, thermal dye transfer paper, or laser photo-paper.

The *second element* of the binding is the mean of binding or the binding system. The binding system can be a system with adhesives or with hooks to bind the bundle together such as the punch and binding systems, the crimp binding, the sewing system, the stitching-stapling system, the cold adhesive binding, the hot-melt adhesive binding, the PUR-melt binding, the panorama binding, the steel-binding system.

The *third element* of the binding is the type of cover around the bundle such as the paperback or soft cover, the hardcover, the separate end-sheets.

The *fourth element* of the binding is the casing-in, which can be done by endpapers with a glue roller system, with pressure sensitive glue or with the new hot-crimping system.

The **third factor** is location where the binding will be done, such as the professional binding facility; the copy shop, photo shop, or photo specialty retailer; or the home.

## Discussion: Bindings

Of course it is difficult to set the same standards for this unlimited number of binding possibilities. Therefore the rules for professional binding facilities and for the shop/home facilities must be different.

For the professional binding facility most of the ISO 11800 are applicable for the folded and for the single sheets. Typically Annex D must be extended to the photobooks with their special papers.

For the shop/home facilities there must be a new ISO standard. The new rules must take in account the latest technology for binding the single sheets. To enable consumers to make photobooks with the same quality as the professionals, the packaging of the three elements, paper, cover and glue must mention the compatibilities between the three elements.

## The Description of the Factors and of the Elements of Binding

The definitions of the ISO 11800 are still available and complemented by the descriptions of the different binding systems.

The possibilities of binding depend mainly from 4 different factors: the quantities of books to bind, the possibility of control over the elements of the binding, the type of cover around the bundle and the casing-in process.

### The first factor: The quantities of books to bind

This factor is very important because completely different machines are required if there must be bound one to ten books, between ten and 1,000 books or more than 1,000 books. Low volume requires low investment with more expensive binding elements. High volume requires expensive fast running machines with low cost binding elements. It is evident that completely different prescriptions will be valid depending on the volumes. The quantities for the three different types of volumes are also moving because of the new techniques of printing through offset, inkjet or laser.

### The second factor: The possibility of control over the four elements of the binding

#### The first element: the types of paper to bind to the bundle

*Offset paper.* Many different papers give different quality of printing, they provide different feel by touching the paper. The wide range of requirements of the customer defines the type of paper that will be preferred, but this paper may not always be the best choice for the chosen binding type.

*Thick silver halide paper:* The very rigid traditional chemical photographic paper.

*Thin silver halide paper:* The modern more flexible photographic paper.

*Inkjet photo-paper:* Created for the technique of inkjet with very fast absorption of the fine bubbles of ink.

*Laser photo-paper:* Created for the laser technique and must resist to high temperature for the melting-drying of the toners.

*Thermal dye transfer paper:* Similar in weight to thick silver halide paper, is a receiver medium for dyes transferred by thermal dye diffusion mechanisms

#### The second element: the types of binding techniques of paper with glue or with hooks

*The Punch & Bind systems:* Will always damage the printed pictures because the holes must be punched to bind the papers with the hooks. These bindings are mostly done with a front and back sheet without a complete cover. The papers in

the ordinary photobook without a U-spine may be blocked in the ring and this will result in physical damage of the papers.

#### Plastic Combs

The plastic used for the production of the combs is PVC, which is also an enemy of image stability, because of possible chemical reactions. Most of the plastic combs age and lose their strength, the plastic becomes fragile. This product must be avoided for long-term permanence.

#### Plastic Spirals

The plastic used for the production of plastic spirals is PVC, which is also an enemy of image stability, because of possible chemical reactions. The plastic of the spirals ages and loses their strength, the plastic becomes fragile. This product must be avoided for long-term permanence.

#### VeloBind

The plastic used for the production of plastic strips is mostly PVC, which is also an enemy of image stability, because of possible chemical reactions. Because of the clamping of the papers, the bundle of photographs is very difficult to open. This product must be avoided for long-term permanence.

#### Wire O Binding

Document can wrap completely around. The wire may be pure metal or metal coated with polyamide. The polyamide and the papers have no chemical interaction. This binding is very good for a long-term permanence.

*The Crimp Binding system:* Because of the clamping of the papers, the bundle of Photo' is very difficult to open. The clamping gives no security about the strength of the binding. Because of the variation of the humidity in the air, the paper can absorb more or less humidity, which may cause a variation of thickness of the bundle. This process can make the binding come loose.

*Sewing, to use thread and needle to assemble book block:* Because of the sewing the photo-papers are very well kept together. The single page sewing is of course completely different of stitching of the folded page (referenced in ISO 11800). With this method the sewing is done at the extreme end of the paper. Because of this position, the danger always exists that the stitches may tear off and that the binding becomes loose. Therefore this sewing method without a protection around the stitch should be avoided for long-term permanence. This system would not meet ISO 11800 3.6, 3.7, 4.2, & 5.9

*Stitching-Stapling:* Because of the stapling, the photo-papers are very well kept together. The single page stapling is done at the extreme end of the paper. Because of this position, the danger always exists that the staples may tear off and that the binding becomes loose. Therefore sewing without a protection around the stitch should be avoided for long-term permanence.

*Cold Glue Binding:* This system of binding is the old fashioned way of binding. There is always the uncertainty about the compatibility of the glue with the chemical components of the paper. It remains a dangerous way of binding for photo-paper because of the possible negative interaction with the paper. Therefore it must be avoided for long-term permanence.

#### *Hot Melt Binding*

Paper Cover. This binding system has a very poor quality of binding for photographic paper, which may come loose out of the glue because of the leverage of the stiff paper. The probability that the sheets will fall out is very great. Therefore it must be avoided for long-term permanence.

The paper of the cover will absorb the melted liquid glue, therefore there is always a conflict between the glue that goes in the paper of the cover and the glue that remains to bind the bundle of paper.

Perfect Binding. This binding system has a very good quality of binding based on the EVA-copolymers, but the photographic paper may come loose out of the glue because of the leverage of the stiff paper. Therefore the new PUR glue is a very good solution, but this system requires very expensive machinery.

*Panorama Binding:* This binding method is made in two steps for high end photobooks with silver halide or ink jet photo-paper. The first step is making the "block", the second step is casing-in the block in the cover.

This method makes panorama views possible up to three inches, perfect for important events. If the correct binding materials are used, then is this method perfect for long-term permanence.

*Steel Binding system based on the U-shaped spine in metal:* This type of binding has two particularities: the binding is always protected by the U-shaped spine and this U-spine can be covered at the inside with 2 types of glue, the binding glue and the casing-in glue.

Four different combinations for the glue in the U-spine are possible.

This U-shaped spine can be done with binding glue alone to bind the bundle directly to the bottom of the U-spine or with casing-in glue alone to stick the first and last page of the bundle to the cover or with the binding glue and the casing-in glue or without the binding glue and the casing-in glue.

This U-spine gives great advantages for the four types of binding of papers.

For the binding with the glue, the paper is bound in the glue but the paper turns always above this binding, so that the binding itself is never charged or pulled out of the glue.

For the binding with staples, the U-spine gives two advantages to the staples, it looks better and the charge on the staples by opening the book is taken away.

For the binding with rings (plastic comb, spiral, wire, etc.) the U-spine gives the protection to the rings so that the papers at the end cannot block "under the ring".

For the binding with perfect binding, the U-spine gives two advantages to the staples, it looks better and the charge on the glue-binding by opening the book is taken away.

### **A closer look to the four different types of binding with U-spine**

*The U-spine with binding glue in the spine:* Very good quality of binding based on the EVA-copolymers, which is not an aggressive glue. **Very important is the fact that the U-spine is like a bath-tub: the very liquid glue cannot disappear.** The binding is extremely solid, because the spine is

made of metal in a U-form and there is no force exercised on the resin. The binding remains extremely solid, even after frequent use. The solidness of the bind is really astonishing. This binding is very good for long-term permanence.

*The U-spine with the stapled bundle of paper:* The bundle of stapled photo-paper is fixed in the PhotoBook by two end-sheets with pressure-sensitive glue. The U-spine of steel has two functions, to hide the staples to improve the aesthetics and to protect the staples against the charges on the staples every time the book is opened. This binding is very good for long-term permanence.

*The U-spine with wire:* The bundle of photo-paper, bound with Wire-O is fixed in the PhotoBook by two end-sheets with pressure-sensitive glue. The U-spine of steel has two functions, the protection of the rings against damage and the protection of the paper against damage every time the book is closed by precluding that the paper can be blocked under the ring. This binding is very good for long-term permanence.

*The U-spine with perfect bind:* The bundle of photo-paper bound with perfect bind is fixed in the PhotoBook by two end-sheets with pressure-sensitive glue. The U-spine of steel has two functions, protect the binding against damage and protect the binding against the charges on the glue every time the book is opened. This binding is very good for long-term permanence.

### **The third element: the type of cover around the bundle**

The type of cover is of course very important to establish the rules for the good bound book.

The *paperback or soft cover* is the most common used cover for reading books. For photobooks it is also important but less than for reading books. The paperback-photobook is nearly always bound with glue. This glue must be compatible with the material of the cover and with the photo-paper.

The *hardcover* is very popular in the photobook industry because the cost of the hardcover is less important than the cost of the fully color printed photo-papers. This hardcover can be with or without a mirror page; it can be with or without the metal U-spine. The casing-in is always very important for this type of photobook.

The *front and back coversheets (single sheets)* is very popular with all the bindings where rings are used such as plastic combs, spirals, VeloBind and wire. This type of cover is less used for photo books, and more as an exceptional application.

### **The fourth element: the casing-in process for hard cover books**

The casing-in process is done mainly with the hard covers. The casing-in is in fact the fixation of the bound bundle of paper in the hard cover.

The *classic system* is with a glue roller system, where the first and last page of the bundle are glued and then pressed in the hardcover. For this process there are manual and fully automated machines available. It is an expensive process because of the high investment or because of the labor. The glue can be cold glue or hotmelt.

A more recently makes use of *pressure sensitive glue*. The pages can have the glue on the last and first sheet of the bundle or on the mirror-page of the hard book.

Very new in the market is the system with hot-crimping. This system is based on the metal U-spine with a thin layer of hotmelt in the upper-side of the U. When the U-spine is warmed up this hotmelt will also become liquid. If then the U-spine is crimped, the first and the last page of the bundle are glued to the upper end of the U-spine. Because of this gluing the impression is very similar to the classic system with glue roller. The advantage of this system is the simplicity and the low investment.

### **The third factor: The location where the binding will be done**

This location is very important because the control of the four elements of the binding determines the quality of the photobook.

The *professional binding facility* controls all four elements of the binding process because they control the purchase of the paper, the binding system including the glue, the cover and the glue for the casing-in.

The *copy shop, or photo shop, or photo specialty retailer* controls very few elements, because these businesses do not control the quality of the purchased goods like paper and glue. The compatibility of all these products is important to guarantee the best quality.

The *home bindery* controls no elements today because there is no system to guarantee the compatibility between the papers and the glues.

### **Summary Current Market**

The consumer produces and purchases photobooks in many ways:

- from in store retail solutions made from a kiosk or mini-lab,
- web solutions designed at home and produced at production facilities,
- to the do it yourself solutions which are designed, printed, and bound at home.

Under the proposed guideline ISO 11800 there is “Not One On Demand Binding Solution” used today meeting these ISO requirements. Creating a photo book ISO certification that requires adherence to ISO 11800 could thus curtail or eliminate commerce for all markets.

## Summary: Binding Solutions

While there is not one perfect solution for all needs, the most versatile and consistently permanent solutions are the different SteelBinding systems.

This is validated by the significant market share that the SteelBinding system currently services and the fact that this system holds a 95% market share for in-store photo book solutions and 40% market share for on-line photo book solutions.

## Summary: ISO 11800

The durability of books held in libraries and archives is a matter of natural concern to the public. This International Standard specifies manufacturing methods and materials that will result in durable hard cover and soft cover binding for books manufactured in commercial quantities. It does not apply to hand bookbinding, individual casing or binding of archival matter.

## Conclusion

Because there are so many different elements in the papers and the glues today there are no guarantees of quality for the single sheet photobooks.

Only in the professional binding facility are there people with experience and possibility of analysis, so that there is a possibility of highly qualified photobooks.

To resolve these problems of uncertainty of quality there must be introduced a classification system for the papers and

glues to match their chemical and physical properties and compatibilities.

The packaging of each paper and glue must have labels where is written the compatibility with other products for long time durability and usability of the products used to produce the photobooks.

It is my professional opinion:

- That a standard for photobooks should be drafted from a clean slate with the standards of compatibility for the products used to produce the good photobooks that meet consumer expectations for longevity. The Task Group 2 subcommittee of ISO Working Group 5 has begun this undertaking
- That ISO 11800 should not be used as a basis for this standard for single sheet bound photobooks.

## Author Biography

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