

# Understanding Matboard

*Being the best frame shop in your area starts with the best products.*

**M**atboard is a fundamental component of almost every framed picture. However, understanding the vast range of information and choices available in matboards can be daunting. In this article, I aim to provide some useful insights about matboard to help you to dispel some of the myths and decipher some of the facts about this vital aspect of our profession.

The two primary purposes for matboard are to provide protection for the artwork and to enhance the framing design.

- 1) Protect. The last consumer survey conducted by the Professional Picture Framers Association found that the number-one reason why a consumer chose to custom frame an artwork was to protect the item. Preservation, clearly, is of primary importance to your customer.
- 2) Enhance. A matboard can help the viewer to focus correctly on the image. This is achieved through a combination of distance, balance, proportion, and color to help enhance the subject matter within its display environment.

From a business perspective, a secondary purpose for using a matboard is profit—given



that the introduction of a matboard can increase both the size and level of value in the sale of a frame.

## How Matboard is Made

Matboards are comprised of layers of paper of various thickness, laminated together. The papers and core of a matboard are made from either unpurified wood pulp, purified alpha-cellulose wood pulp, or in the case of museum-grade board, cotton linter pulp.

The primary constituent of any paper is cellulose fiber. Cellulose fibers are made up of chains of molecules defined as alpha, beta, gamma, and hemi cellulose, which define the length of the molecular chain and shape of the fiber. The grade and quality of a board is based on the content mix of these cellulose fibers, which in turn is defined by the purpose and

*Different grades of matboard are designed for different applications. Understanding which choice to make is important to both your customer and your business.*



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*This unframed artwork exhibits the irreparable damage of “acid burn” caused by the use of poor-quality framing materials and matboard.*

attributes required of the board. Alpha cellulose fibers possess the longest and strongest molecular chains and offer the highest performance in structure and longevity for a permanent paper or board.

Alpha cellulose is sourced from either cotton or wood pulp, neither of which is “pure” when sourced in a raw form. Both cotton and wood pulp need to go through a mechanical and chemical purification process to “cook” and remove the undesirable components such as lignin (wood) and wax (cotton) and dissolve any non-cellulose components. The remaining fibers are then washed and bleached with hydrogen peroxide for further purification and whitening. Buffering agents such as calcium carbonate (chalk) are then added to the purified pulp to create an alkaline reserve (buffer).

When it comes to the cost of pulp, the higher the percent content and quality of alpha cellulose and the fewer impurities it has, the more expensive it is. Therefore, conservation-grade boards cost more than other, cheaper matboards. Any excess processing or recycled pulp content added introduces a great proportion of shorter-length cellulose molecules, which are not as stable. This then lowers the overall grade, quality, and price of the pulp.

Cotton boards contain longer alpha cellulose fibers, because less processing is required to purify the raw material. These longer fibers can increase the life span of an alpha cellulose board from decades to centuries.

## A Look at Lignin

Lignin is an organic glue-like substance present in raw wood pulp which bonds the different fibers together. When present, this lignin oxidizes over time, causing the cellulose fibers to break down and degrade and create acidic by-products. Acid can migrate and become harmful to other paper-based products, such as artwork inside a frame. The process by which an artwork begins to deteriorate, becoming discolored and brittle, is commonly called acid burn.

Only the best quality, conservation-grade matboards have the lignin removed from their pulp to create a stable and safe board. Cheaper pulp, such as that used in standard decorator-grade “white core” board, can still contain lignin, which in time becomes acidic and harmful to the artwork.

## Buffering and “Acid-Free”

Acid is damaging to artwork, and one way to neutralize acid is to dilute it with an alkaline substance to absorb and neutralize the acid. Alkaline buffering agents such as calcium carbonate are added to pulp during the manufacturing process to reduce the overall acidity of the board and even help protect it from acidic byproducts that may develop in the future.

However, low-quality matboards marketed as “acid-free” may still contain dangerous acid-causing elements such as lignin, so they’re not necessarily completely free of acid. These cheaper matboards can be buffered with just enough alkaline additive to register a pH level higher than 7.0 at the time of manufacture. However, this pH may only be temporary, as the alkaline reserve can eventually become saturated with the acidic byproducts over time—



*A decorator-grade matboard that was originally marketed as “acid-free,” revealing the long-term results of buffering saturation and subsequent acid burn.*

with the inevitable outcome of the mat becoming acidic and potentially harmful to the artwork. A more accurate description for these boards should be “temporarily acid-free!”

It is also important to note that in some cases, alkaline buffering can actually be detrimental to certain types of organic, protein-based media such as leather, wool, and albumen photos, in which case a pH neutral, un-buffered matboard is recommended.

## Other Factors

Apart from the pulp content, there are other important factors that contribute to a conservation grading of matboard, including the quality of the surface papers, color fastness, the quality of the bonding adhesives, and metal content.

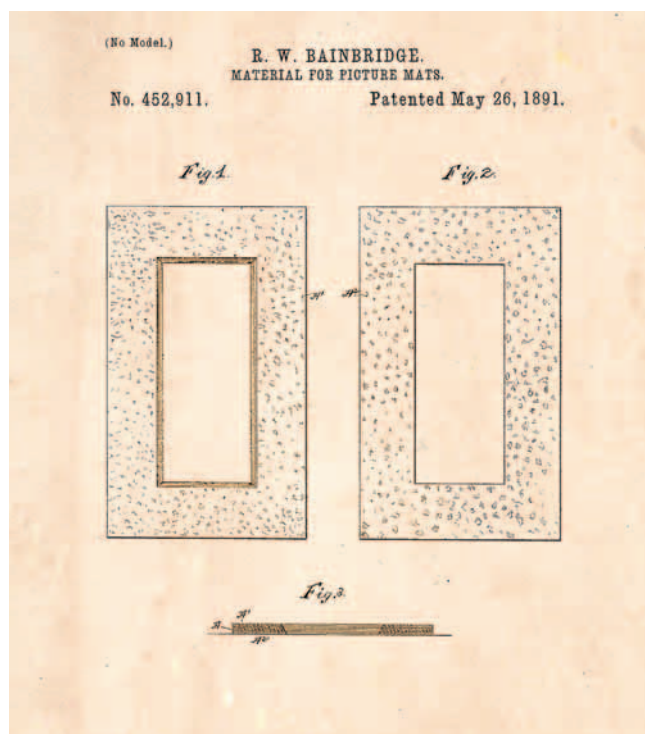
For example, in order to meet minimum conservation requirements, colorants used in papers need to be resistant to fading (especially if exposed to standard UV light) and bleeding (if ever exposed to moisture or damp conditions). These minimum requirements are dictated by industry standards, governed by recognized industry bodies and institutions such as the Professional Picture Framers Association (PPFA), the Library of Congress (LOC), and the Fine Art Trade Guild (FATG) in the United Kingdom.

## Grades of Matboard: A Basic Overview

Due to the varying costs of raw materials (pulp, core, surface papers), matboards are manufactured to suit different market requirements and are commonly distinguished by industry standards as decorator-grade (basic), conservation-grade (better) and museum-grade (best).

The raw material used for decorator-grade matboard is basic, bleached, low-grade wood pulp, which is buffered with calcium carbonate to provide a temporary alkaline pH level, allowing them to be called “acid-free”—but these still may contain lignin. The cheaper, dye-based surface papers used on these boards are also not color-fast like more expensive, pigment-based surface papers; thus, subject to more rapid fading. These matboards are suitable for short-term, decorative framing, but certainly not suitable for items of value, or long-term custom framing.

Museum-grade matboard is the highest grade of board available and contains the longest and cleanest alpha cellulose fibers, with all layers of the board made from virgin cotton pulp. The only additional additives permissible for this grade of board is a buffering agent like calcium car-



The original patent for commercially produced decorative matboard made by Richard Bainbridge in 1891.

## A BRIEF HISTORY OF MATBOARD

**T**he earliest forms of matboard used were wood panelling, usually decorated and gilded along with the frame. It wasn't until the 1400s, when paper manufacturing was developed, that paper-based artworks and matboards in the form of folios started to be used.

The first form of matboard folios used were similar to book covers and used to support, protect, store, and transport thin vellum and paper book pages and artworks.

When glass was developed in the 1500s, paper could be displayed in a conventional picture frame, along with a decorative matboard designed to help enhance the artwork.

By the 1800s, the familiar form of matboard with a window and a supportive back mount was becoming commonplace to store and display paper-based artworks.

In the late 1920s, cotton-fiber matboard was first commercially produced. ●





James Druzik, senior scientist of the Getty Conservation Institute, says, "The SPZ zeolite, incorporated in Artcare, is a very viable material for preventative conservation applications."

bonate and SPZ zeolites (which proactively trap and neutralize pollutants, both from the atmosphere as well as those generated by the artwork itself).

As previously mentioned, there are other requirements that contribute to the classification of a matboard. For further understanding, refer to the PPFA Comparative Standards for Matboard available on the online store at [ppfa.com](http://ppfa.com).

## What is "Rag" Matboard?

Rag matboard is a term used to describe matboard derived from cotton fiber. This term was first used in the early days of papermaking when some papers were made from scraps of fabric (rags), which is now no longer the case. The materials used in today's cotton rag matboard is sourced from the byproduct of cotton production called the linter.

Note that some rag matboards on the market only contain cotton fiber for their core, but their backing and surface papers are derived from wood pulp sources—thus technically not meeting the minimum requirements for museum-grade standard.

However, solid rag matboards comprised of 100 percent cotton alpha cellulose offer better long-term strength and composition. These boards are considered the finest and preferred by museums and institutions.

## The Case for Conservation-Grade Matboard

Your customers' images are important to them, and they deserve to be offered the best. Although conservation-grade matboard may be more expensive than a standard decorator-grade board, the difference may not be all that dramatic when considered as part of the overall price of the framing package.

If you're still not convinced, keep in mind that it should really be your customer's decision to pay more for a better product to preserve their precious images, so at least provide them with the options to choose from. Regardless of any profession you choose, no one ever achieves the status of being the best without using the best-quality materials. Picture framing is no different. The quality of your product is vital for your reputation and an essential ingredient for any long-term business success.

At the end of the day, it comes down to where you want your business to be: if you want your business to be the best, it all starts by selling the best. **PFM**

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