



## Making paper fun

By Sabine Lenz

# To Be or Not to Be Acid Free?

My friend is an avid scrap booker. But there's something that she's even more focused on: whether the paper is acid free or not. Whenever I bring her some of our excess paper samples, her first comment is not about the paper's beauty, but "Is this paper acid free?"

Truth is that around 80 percent of commercial printing papers today are acid free – or alkaline or permanent.

### What does acid have to do with it?

The acid content in a paper is the best indicator of its life expectancy. It is measured on a pH scale of 0 (acidic, very short life expectancy) to 14.0 (alkaline, very long life expectancy). Any paper becomes increasingly acidic as it ages and is exposed to light and air.

Acidic papers have a pH below 7.0. Think of your newspaper, for example, which is based on the lower pH levels. Carefully stored, it can have a life expectancy of up to 20 years. Left to light and air which trigger its deterioration, it may last only a few weeks.

Acid free means that the paper's pH is 7.0 (neutral) or higher (alkaline). Acid free papers will last up to 200 years under normal use and storage conditions. Does your direct mail piece really have to last this long?

It would be so easy if a paper that is acid free could also be considered permanent. But, you guessed it ...

Permanent paper will last for several hundred years without significant deterioration. With a pH level of 7.5 or above, permanent paper grades are groundwood free with additional strength and performance properties that guarantee its use and retention for a maximum period of time.

### How does the acid get in the paper?

The art of papermaking dates back several thousand years to around 3,000 BC, when paper was originally made from papyrus. Through the centuries and in different regions of the world, materials such as sheepskin, bamboo, silk, hemp and more recently, cotton rags took the place of papyrus.

Paper remained a luxury item throughout the centuries until the advent of the steam-driven papermaking machine (Fourdrinier) in the 19th century. The Fourdrinier made paper with fibers from wood pulp, which was more readily available and thus made the printed word available to the general public.



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But as with most new inventions, there was a downside to making paper in this more economical way. The machines used shorter, weaker fibers, molding a sheet with fibers in two directions as opposed to the impartial fiber arrangement of handmade paper.

The development of alum rosin came to the rescue. Also known as aluminum sulphate, alum rosin was used as a “sizing” agent in many machine-made papers from the 19th century to the present. The purpose of sizing is to strengthen the bonds between the paper’s fibers and help reduce the absorption of ink through the page. Alum rosin is also the primary source of harmful acid in papers that have been treated with sizing.

### **How can strength and color be preserved?**

In the 1970s, libraries and archives around the world began to face a serious problem: Their books and treasured documents were falling apart.

The paper industry devoted much effort to studying the chemical interaction of alum, rosin and paper fibers. The result: Acid caused the destruction of books and papers over time. In fact, the pH of paper proved to be the most significant factor influencing eventual strength loss and color deterioration.

By changing to synthetic, nonacidic sizing and with the addition of calcium carbonate as a mild alkaline buffer, the first commercially produced permanent papers were created.

Since the 1980s, many mills have readily converted to alkaline (or acid free as it is primarily called) paper production processes because they proved to be less expensive and gave the paper a longer life span.

### **Acid free and recycled?**

There are many acid free papers on the market that contain from 10 to 100 percent post-consumer waste. As an added bonus, acid free paper manufacturing introduces fewer pollutants into the environment.

### **Why worry about permanence?**

State departments require some of their documentation to be printed on permanent paper. The same goes for books and other historical evidence. Worldwide historical evidence is threatened because documents were printed or written on acidic paper and are now crumbling into dust.



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And before you ask, yes, my friend's scrap booking efforts definitely fall into the "historic evidence" category. As for us mere mortal designers, the life span of an acid free paper is surely long enough, thank you very much.

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