

## PRODUCT INFORMATION SHEET

### **BUFFERED VS. UNBUFFERED - Enclosures for Photographic Materials**

Paper becomes buffered when a paper mill adds calcium carbonate to paper pulp during the manufacturing process. This calcium carbonate (chalk) remains in the paper as a "reserve" and is there to help neutralize acids that may form or to prevent the formation of acids entirely.

When a buffered paper is converted into an enclosure (envelope, folder, box, etc.), the buffering agent helps extend the life of the enclosure, preventing it from rapid deterioration. All things being equal, buffering is desirable for the enclosure because it neutralizes acids generated within the paper or absorbed from the environment.

The question now becomes whether or not a photograph stored within might be affected by the presence of buffers in a paper enclosure. Normally, there is little likelihood that the mild alkalinity of a buffered enclosure would have any affect on a photographic image or emulsion.

It was once thought that the electrical charges on proteins like gelatin, balanced at a mildly acidic pH of 4.5, made a buffered enclosure undesirable. Three reasons this concern is unjustified follow:

1. Chemical interaction of any kind between the enclosure and the photograph is unlikely unless both get wet.
2. Gelatin is not greatly harmed by mild alkalinity.
3. No evidence of damage to gelatin from buffered papers has ever been produced from accelerated aging or natural aging.

However, it is believed that for two types of photographs, namely dye transfer prints and cyanotypes, unbuffered enclosures should be used. The image substance of both these print types can be harmed by alkalinity and precautions should be taken in case they get wet or react very slowly over time.

There are also some instances where buffered enclosures are highly desirable, not just so enclosures last a long time, but the photos as well. Cellulose acetate and nitrate negatives give off acidic fumes as they deteriorate. Buffering can act to neutralize some of these fumes and protect neighboring negatives and photos from their affects.

For most other kinds of photographs, including black and white prints, color prints, and even albumen prints, either buffered or unbuffered paper enclosures (providing they are of acceptable quality in other ways) would be appropriate.

All enclosures should pass the Photo Activity Test (PAT).