

# Archival/Paper Permanence



**Sappi Printer Technical Service**

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The objective of the American National Standard for Permanence of Paper (ANSI/NISO Z39.48-1992 (R2009)) is to have established archival criteria and testing procedures to determine that under normal use and storage conditions typical of libraries and archives, certain paper publications and documents could be expected to last several hundred years without significant deterioration. Europe has a similar set of standards and testing for archival properties under ISO 9706.

All Sappi North America wood-free grades pass the paper permanence tests required by the ANSI/NISO Z39.49-1992 (R2009) specification and all Sappi Europe wood-free grades pass similar tests required by ISO 9706. Both NA and EU standards include testing parameters relevant to the permanence of paper such as acid-free pH, alkaline reserve (calcium carbonate content), tear resistance, and lignin content.

The acidity or alkalinity of paper and the paper making process affects both the print and archival quality of the finished product. Excess acidity can retard ink drying, induce scuffing, and accelerate paper degradation. All Sappi NA and EU wood-free paper grades are acid-free.

Even when certified to these standards, there is no way of determining exactly how long paper will retain its properties such that the printed sheet remains legible and pliable. This is because variable use and storage conditions with respect to heat, humidity, and light exposure will have a definite impact on the aging rate of the sheet.

If the material printed on these certified grades is subject to normal use in climate-controlled conditions that would be typical of libraries or archives, the products could be expected to last several hundred years without significant deterioration. However, this is not likely in most circumstances as advertising brochures, calendars and annual reports are not typically stored and used as archival materials. If the nature of the printed material is such that it is expected to last many years, the appropriate storage conditions should be utilized.

Physical and optical characteristics such as brightness, opacity, and thickness are not considered to have an effect on the permanence of paper and are therefore excluded from the standards. In addition, artificial aging tests for color retention are excluded from the testing standards since color changes such as edge yellowing are not a significant impairment to use or legibility.

Color retention and the aging effects of discoloration or edge yellowing are directly related to exposure to heat, humidity, and light. Brighter papers can be particularly sensitive to prolonged exposure to ultraviolet or fluorescent light which may accelerate the yellowing process as brightness diminishes. Special care should be taken to insure proper storage conditions of both unprinted and printed paper to minimize any adverse exposure. These variable factors are beyond the scope of the archival standard.