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Permanence of Paper for Publications and Documents in Libraries and Archives

Abstract: This standard establishes criteria for coated and uncoated paper that will last several hundred years without significant deterioration under normal use and storage conditions in libraries and archives. This standard identifies the specific properties of such paper and specifies the tests required to demonstrate these properties.

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Foreword

(This foreword is not a part of the American National Standard for Permanence of Paper for Publications and Documents in Libraries and Archives, ANSI/ NISO Z39.48-1992. It is included for information only.)

This standard is a revision of American National Standard for Permanence of Paper for Printed Library Materials, Z39.48-1984. It was prepared by Standards Committee II of the National Information Standards Organization. Standards Committee II was established in December 1986 to revise ANSI Z39.48-1984 to encompass coated paper. In 1988, the Committee's charge was broadened to include review and revision of the standard's specifications for uncoated paper.

The objective of this standard is to establish criteria for coated and uncoated paper that will last several hundred years, without significant deterioration, under normal use and storage conditions in libraries and archives. Actual observation and laboratory test results indicate that paper meeting the requirements described in this standard should survive for hundreds of years. Librarians, archivists, and other persons concerned with the preservation of library materials are all too familiar with the speed with which acidic paper embrittles. This embrittlement has made probable the loss of the original hard copy format of much of the published record from the 19th and 20th centuries and has necessitated huge expenditures for copying deteriorating publications to more permanent media. By identifying the properties consistent with paper longevity, the standard seeks to encourage wider use of permanent paper so that comparable future preservation problems can be prevented.

To obtain the data needed for its work, NISO commissioned the Institute of Paper Science and Technology to conduct a series of tests of coated papers and of uncoated alkaline papers with varying lignin contents and alkaline reserves. In preparing the revision, the Standards Committee II considered the results of these tests, the results of relevant tests conducted under other auspices, and comments from paper makers, publishers, printers, and the preservation community. The current standard represents a reasonable interpretation of currently available information on the permanence of paper, but there are a number of unresolved questions that require further investigation. There is evidence that some papers that do not meet all of the standard's criteria, e.g., some alkaline papers with higher than 1% lignin levels, can exhibit excellent retention of physical properties. Additional research is needed, however, to define more precisely the conditions under which higher levels of lignin are compatible with paper permanence. The next revision of the standard should reflect the results of such research.

This standard includes parameters that are relevant to the permanence of paper. It is assumed that other characteristics, such as brightness, opacity, and thickness, will be specified by purchasers based on the intended use of their publications and documents. As these parameters have no apparent effect on the permanence of paper they are excluded from this standard. Tests after artificial aging are also excluded because the criteria for unaged paper specified in the standard appear to be adequate predictors of acceptable retention of properties after aging. The standard does not dictate the use of either virgin or recycled paper pulp. As with virgin papers, some recycled papers will meet the standard's criteria and others will not.

There are a number of factors beyond the scope of this standard that affect the permanence of paper in publications and documents. These include the environmental conditions under which materials are stored, the method by which publications are bound, and the use of printing inks that do not adversely affect paper permanence.

Permanent paper should be used for all publications and documents of potentially long-lasting value. Publishers should indicate the use of permanent paper in the publications themselves and in advertising, packaging, etc. as set forth in this standard in Section 6, "Notice of Compliance."

Suggestions for improving this standard are welcome. They should be sent to the National Information Standards Organization, 4733 Bethesda Avenue, Suite 300, Bethesda, MD 20814.

This standard was processed and approved for submittal to ANSI by the National Information Standards Organization. NISO approval of this standard does not necessarily imply that all Voting Members voted for its approval. At the time it approved this standard, NISO had the following members:

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Permanence of Paper for Publications and Documents in Libraries and Archives

1. Introduction

1.1. Purpose

This standard establishes criteria for coated and uncoated paper that will last several hundred years without significant deterioration under normal use and storage conditions in libraries and archives. This standard identifies the specific properties of such paper and specifies the tests required to demonstrate these properties.

By identifying the properties consistent with paper longevity, the standard seeks to encourage wider use of permanent paper and to promote recognition of its importance to the long-term preservation of recorded knowledge. As part of this process, the standard recommends that publications printed on paper that meets these criteria be identified by a prominently displayed symbol and statement.

1.2. Scope

The standard applies to coated and uncoated paper used in the production of publications and documents acquired and retained by libraries and archives. Examples include:

(1) Important works of fiction and nonfiction

(2) Scholarly periodicals, monographs, and reprint editions

(3) Collected editions

(4) Encyclopedias, dictionaries, bibliographies, directories, indexes, abstracts, and other reference works

(5) Government documents

(6) Titles not appropriate for transfer to other formats

(7) Original documents, records, and forms, including computer output and photocopy replacements

(8) Printed musical scores

(9) Original art and art reproductions.

2. Definitions

Alkaline reserve — A compound (e.g., calcium carbonate) in paper that neutralizes acid that might be generated from natural aging or from atmospheric pollution.

Cataloging in Publication (CIP) program — A cooperative effort between the Library of Congress and book publishers in the United States that provides prepublication cataloging information, in standard library format, for forthcoming monographic titles. The information appears on the verso of the title page.

Coated paper — Paper with a surface coating of a minimum weight which has been applied for the purpose of improving the paper's appearance and printability. Coated paper has a coating weight equal to or greater than 2.5 lbs. (3.75 g / m^2) per side for papers less than 50 lbs. in total basis weight (75 g / m^2) and equal to or greater than 4.0 lbs. (6 g / m^2) per side for papers 50 lbs. (75 g / m^2) or heavier, with at least 50% of the coating weight in pigment.

Lignin — A brown-colored organic substance which acts as an interfiber bond in woody materials.[1] Natural binding constituent of the cells of wood and plant stalks, a complex three-dimensional polymer of phenylpropane or propylbenzene structure. The chemistry of lignin is characterized by having hydroxyl or methoxyl groups attached to the benzene carbon atoms.[2]

Paper — A homogeneous sheet of felted cellulose fibers, bound together by interweaving and by the use of bonding agents.[2]

Basis weight — The mass in pounds of a ream of paper of a given sheet size and number of sheets. The basis weight of book paper is equal to the weight of 500 sheets measuring 25 inches by 38 inches. The basis weight of writing or printing paper is equal to the weight of 500 sheets measuring 17 inches by 22 inches.

Grammage — The mass per unit area expressed in grams per square meter (g / m^2). (See TAPPI T410 om-88.)

1. Lavigne J.R., Patrick K.L. *Pulp & Paper Dictionary*. San Francisco: Miller Freeman Publications, Inc., 1986; 329-30.

2. Smook G.A. *Handbook of Pulp & Paper Terminology*. Vancouver: Angus Wilde Publications, 1990; 44.